THE EFFECTS OF MATERNAL PREPARATION ON KNOWLEDGE AND CAREGIVING BEHAVIORS TOWARDS PREMATURE INFANTS AFTER DISCHARGE

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Admission of premature infants into the newborn care unit causes insufficient opportunity for mother's closeness, and learning appropriate maternal behaviors and caregiving skills. When the infants were discharged, it was found that their mothers felt anxious and lacked confidence about caregiving for the babies. They needed advice and assistance in caring for their babies.

The purposes of this study were: to compare maternal knowledge on premature infant caregiving during pre-preparation and immediate post-preparation, to examine maternal behavior on premature infants and to examine the correlation between maternal knowledge and behavior about premature infant caregiving one month after hospital discharge. The forty samples of the study were the mothers of premature infants who were hospitalized in Buddhachinarach Hospital. The instruments used in this study were a maternal preparation plan, a sound and slide presentation and a handbook about caregiving for a premature infant. The instruments for data collection consisted of demographic data form, a pre and post questionnaire concerning knowledge of premature infant care, a questionnaire concerning maternal behaviors regarding this care, and a record form of the health status of the premature infant. The data was analyzed using percentage, mean, t-test and Pearson's Product Moment Correlation coefficient.

Results from this study showed that the mean score of knowledge on premature infant care of the mothers in the immediate post-preparation is higher than that in pre-preparation with a statistically significant difference ($P < .001$). Also, the score of knowledge on premature infant care is related to the score of the behavior on premature infant care 1 month after hospital discharge with a statistically significant difference ($P < .05$).

The results of this study suggested that a nurse should use the maternal preparation plan, a sound and slide presentation and the handbook for maternal preparation before hospital discharge. Responsible staff members employing the maternal preparation plan are very important as they had best opportunity to provide knowledge to the mothers of premature infants before their hospital discharge.

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รุ่งทิวา หวังเรืองสถิตย์:ผลการเตรียมความพร้อมของมารดาต่อความรู้และพฤติกรรมของมารดาในการดูแลทารกคลอดก่อนกำหนดภายหลังจำหน่ายออกจากโรงพยาบาล (THE EFFECTS OF MATERNAL PREPARATION ON KNOWLEDGE AND CAREGIVING BEHAVIORS TOWARDS PREMATURE INFANTS AFTER DISCHARGE) คณะกรรมการควบคุมวิทยานิพนธ์ : กรรณิการ์ วิจิตรสุดนธ์ ค.ม. (พยาบาลศึกษา), วท.ม. (สาธารณสุขศาสตร์), พรศรี ศรีอัษฎาพร วท.บ. (พยาบาล), ค.ม. (วิจัยการศึกษา), ละเอียด อุดมรัตน์ วท.บ. (พยาบาล), ค.บ. (มัธยมศึกษา), ค.ม. (โสตทัศนศึกษา) 128 หน้า. ISBN 974-663-446-1

จากการที่ทารกคลอดก่อนกำหนดต้องแยกจากมารดาเพื่อเข้ารับการรักษาในหออภิบาลทารก ทำให้มารดาขาดโอกาสได้อยู่ใกล้ชิด เรียนรู้ และฝึกทักษะการเลี้ยงดูทารก เมื่อแพทย์อนุญาตให้ทารกกลับบ้านจึงพบว่าพ่อแม่มีความวิตกกังวล ขาดความมั่นใจ ต้องการคำแนะนำในการดูแลทารกที่บ้าน

การศึกษาครั้งนี้มีวัตถุประสงค์เพื่อเปรียบเทียบความรู้เกี่ยวกับการดูแลทารกคลอดก่อนกำหนดของมารดาระหว่างก่อนการเตรียมความพร้อมกับภายหลังการเตรียมความพร้อมทันที ศึกษาพฤติกรรมของมารดาในการดูแลทารกคลอดก่อนกำหนดภายหลังจำหน่ายทารกออกจากโรงพยาบาล และศึกษาความสัมพันธ์ระหว่างคะแนนความรู้เกี่ยวกับการดูแลทารกคลอดก่อนกำหนดภายหลังจำหน่ายออกจากโรงพยาบาล 1 เดือน กับคะแนนพฤติกรรมเกี่ยวกับการดูแลทารกคลอดก่อนกำหนดภายหลังจำหน่ายออกจากโรงพยาบาล 1 เดือน โดยมีกลุ่มตัวอย่าง คือ มารดาของทารกคลอดก่อนกำหนดที่ทารกเข้ารับการรักษาในโรงพยาบาลพุทธชินราช จำนวน 40 คน เก็บรวบรวมข้อมูลโดยใช้แบบบันทึกข้อมูลทั่วไป แบบสอบถามความรู้ และพฤติกรรมเกี่ยวกับการดูแลทารกคลอดก่อนกำหนด นำข้อมูลมาวิเคราะห์หาร้อยละ ค่าเฉลี่ย ค่าที และค่าสัมประสิทธิ์สหสัมพันธ์ของเพียรสัน

ผลการวิจัยพบว่าค่าคะแนนเฉลี่ยความรู้เกี่ยวกับการดูแลทารกคลอดก่อนกำหนดของมารดาภายหลังการเตรียมความพร้อมทันทีสูงกว่าก่อนการเตรียมอย่างมีนัยสำคัญทางสถิติที่ระดับ .001 และค่าคะแนนความรู้เกี่ยวกับการดูแลทารกคลอดก่อนกำหนดภายหลังจำหน่ายออกจากโรงพยาบาล 1 เดือน มีความสัมพันธ์กับคะแนนพฤติกรรมเกี่ยวกับการดูแลทารกคลอดก่อนกำหนดภายหลังจำหน่ายออกจากโรงพยาบาล 1 เดือน อย่างมีนัยสำคัญที่ระดับ.05

ผลการวิจัยเสนอแนะให้มีการนำแผนการเตรียมความพร้อม และสื่อการสอนดังกล่าวมาใช้ในการให้ความรู้แก่มารดาที่มีทารกคลอดก่อนกำหนดก่อนที่จะจำหน่ายทารกออกจากโรงพยาบาล และควรจัดให้มีบุคลากรที่ทำหน้าที่รับผิดชอบในการนำแผนการเตรียมความพร้อมของมารดามาใช้ เพื่อก่อให้เกิดประโยชน์สูงสุดในการให้ความรู้แก่มารดาก่อนจำหน่ายทารกออกจากโรงพยาบาล

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CHAPTER I

INTRODUCTION

Background and significance of the problem

Premature infant refers to a baby who is born before 37 weeks of gestational age, regardless of birthweight (Ingalls and Salerno, 1991: 272; Siripun, P., 1990: 66). However, most premature infants also have low birthweight; that is, less than 2,500 grams (Nutpakdee, P., 1990: 66). In Thailand, the statistics of premature infants for the overall country is not available, because only infant birthweight is reported without the gestational age. The latest statistics available from the Ministry of Public Health (1995) showed that 8.34 percent of babies born in 1994 weighed less than 2,500 grams. When focusing only on Phitsanulok province, the statistics showed that low birthweight infants increased from 10.24 percent in 1993, which was placed as the second rank in Region 9, to 10.54 percent which was the first rank in 1994 (Ministry of Public Health,1992-1994). In Obstetric Department, Buddhachinarach Hospital, Phitsanulok Province, approximately 11.96 and 11.72 percent of all living newborns delivered in the 1997 and 1998, respectively, were premature infants (Buddhachinarach Hospital, 1997a-1998c). Of premature infants born in 1997 and 1998, 35.36 percent and 75.27 percent ,respectively, were hospitalized due to low birthweight and other complications (Buddhachinarach Hospital, 1997b-1998d).

Mothers of premature infants may face same difficulties. Immediately after birth, the mother and her baby are separated into different units, and the mother is not allowed to care of her own baby until the baby is well recovered and nearly discharged. During her visits, she may have only a few minutes to hold or breast-fed the baby. Otherwise, she may be merely allowed to look at the baby through a glass window if the baby's health status is unstable or not good enough. Consequently, the mother has no opportunity to get familiar with the typical characteristics of a premature infant, and to learn her baby's behavior. In addition, the mother has less opportunity to learn maternal caregiving skills. In such a case, the mother of a premature infant lacks self-confidence in caring of her own baby at home.

During personal conversation with the head office of home visits at the Social Medicine Department, Buddhachinarach Hospital, the researcher found that most mothers of premature infants in the municipality of Phitsanulok Province do not have proper knowledge of breastfeeding, supplemental food and solid food, hygienic care , growth and development (Interview, 1999). What the researcher found was consistent with a study by Mesukkho, Jutharat. Mesukkho(1997) examined the problems and needs of mothers of premature infants after hospital discharge, in Chang Mai . She found that mothers of premature infants had problems in child caregiving and needed essential information, regarding breastfeeding, formula milk, supplemental food, bathing, infant medication, sleeping and awakening patterns, crying behavior, growth and development, immunizations, common health problems, and the necessity of follow up at a

well baby clinic. According to Seltzer (1997) the parents of the premature infants are more likely to worry about how to care of the babies even though their babies are not in a serious condition. Thus, the essential knowledge and skills in caring of premature infant should be provided to such mothers before hospital discharge.

Routinely, at Buddhachinarach Hospital, all mothers of full-term and premature infants are given instruction at discharge about general care for babies. That is, mothers of premature infants do not have an opportunity to get specific information of how to take care of the premature babies at home, and what they should particularly be concerned about. One reason for not providing specific information to mothers' in this group may be due to shortage of staff nurses.

Lack of proper intervention in preparing such maternal knowledge and skills may result in increasing infant morbidity. From the hospital record in 1994 (Buddhachinarach Hospital, 1994), 19.8 percent of the premature infants born at Buddhachinarach Hospital came back to the hospital during their first two years of life with health problems. Some of them made several visits up to 14 times. Additionally, 6.3 percent were admitted with health problems related to respiratory tract infection and gastrointestinal tract infection.

All in all, lack of information and opportunity for mothers of premature infants in learning typical characteristics and behavior of premature infants, practicing basic skills in daily care, such as bathing, breastfeeding, and promoting growth and development may result in vulnerable mothering. Thus,

the researcher is interested in creating an intervention of maternal preparation for this group of mothers. The purpose of this study is to determine the effects of the provided intervention on maternal knowledge and caregiving behavior towards premature infants after discharge. This study is based on the learning theory and the condition of learning development by Gagne', Briggs and Wager (1988).

Purpose of the study

1. To compare maternal knowledge on premature infant caregiving during pre- and immediate post-preparation.
2. To examine maternal behavior on premature infant care after hospital discharge.
3. To examine the correlation between maternal knowledge and behavior on premature infant caregiving one month after hospital discharge.

Conceptual framework

The theoretical framework underlining the study was learning theory. Gagne', Briggs and Wager (1988) stated that the process of learning resulted from perceiving information by the process of the central nervous system. This information was collected by the short-term memory and transferred into a long-term memory. When the information was reviewed, people could remember. The previous memory was recalled when one received a stimulus from related information or events. Thus, the researcher provided the maternal

preparation on knowledge, demonstration and practices in order to develop the ability of the mothers on premature infant caregiving. The topics of the premature infant caregiving were formulated after the review of related literature and study of pervious research. The topics were categorized into 3 components. Three days of the preparation consisted of learning knowledge and practicing the skills on the premature infant care. The handbook was given out to the mothers of the premature infants on the last day in order to facilitate the mothers to apply more suitable caregiving at home. The conceptual framework of the study is presented in Figure 1.

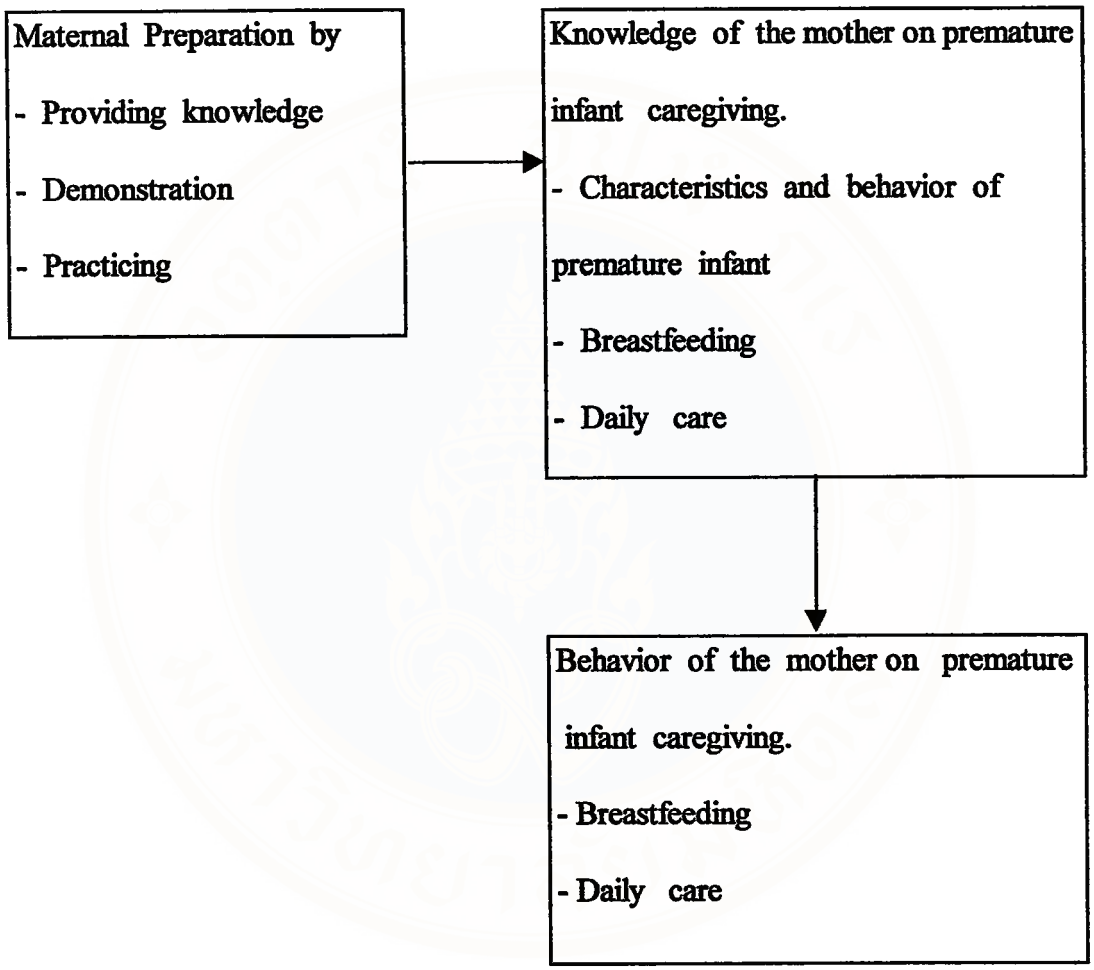

Figure 1 : The study framework of the effects of maternal preparation on knowledge and caregiving behavior towards premature infant after discharge.

Hypothesis

1. Maternal knowledge scores at immediate post-preparation will be higher than that pre-preparation.

2. Maternal knowledge is related to maternal behavior at one month after hospital discharge.

Scope of the study

This study was conducted on mothers and their premature infants, who were born and hospitalized at Pediatrics Unit 3, Buddhachinarach Hospital, during April- September, 1999.

Definition of Terms

Maternal preparation on premature infant caregiving

Maternal preparation on premature infant caregiving is defined as the educative instruction developed and provided by the researcher to mothers of premature infants before discharge. The procedure used in the maternal preparation of this study is based on the learning theory, and the condition of learning development by Gagne', Briggs and Wager (1988). The educational instructions are arranged for each individual mother. The intervention is carried out by using several methods such as sound slides, demonstrate and practice.

Knowledge of premature infant caregiving

Knowledge of premature infant caregiving refers to the essential information for mothers in caring of premature after the discharge such as;

- Characteristics and behavior of a premature infant in terms of sleeping patterns, crying, eating and soiling.

- Breastfeeding.

- Daily care including cleaning after soiling, shampooing, bathing, warming, stimulating growth and development, as well as monitoring and solving common problems frequently found in infants.

The knowledge of premature infant caregiving will be assessed by a 25 item questionnaire with dichotomous responses developed by the researcher.

Behavior of premature infant caregiving:

Behavior of premature infant caregiving is defined as proper behavior of mothers in providing the following care for their premature infant:

- Breastfeeding emphasizing hand washing before the beginning of feeding, positioning during breastfeeding, sucking technique and belching, as well as mothers' traditional practice during puerperium that may affect infant health.

- Daily care such as cleaning after soiling, shampooing, bathing, warming, stimulating growth and development ,as well as monitoring and solving common health problems.

The behavior of premature infant caregiving will be assessed by a maternal behavior questionnaire, developed by the researcher. The maternal behavior questionnaire contains 17 items with a 4 scale response.

CHAPTER II

LITERATURE REVIEW

In this study, the researcher has reviewed many medical journals concerned with nursing, which are related to premature infant care and maternal preparation on mother's caregiving for premature infants after discharge.

Premature infant

In this study the term ' Premature State' of an infant, is defined as a state in which a baby is at a gestational age or calculated pregnancy period of less than 37 weeks, regardless of the weight of the infant (Seltzer, 1996; Didona and Mark, 1996: 338; Wilson, 1994). Gestational age can be assessed by the physical examination and a neurological examination. Several techniques have been applied to verify the state of an infant in a gestational state, such as Usher, Dubowitz, Nicolopoulous and Ballard, etc. The condition of an infant in a premature state can be classified by a condition in the gestational age and seriousness of the infant's health condition, which can be categorized into three conditions. (Nakphet, K., 1992; Moore and Galloway, 1981: 167; Usher, 1981: 230-231)

1. Extremely premature infant is a gestational age period calculated at 24-30 weeks, with birth weights of about 500-1,500 gram, and is prevalent among

0.8-1.0 percent of live newborns. In these groups of newborns, the growth and physical development have not yet been completed. The mortality rate is high. In cases of infants who survive premature birth complications , it has been seen that there appears an external physical brain abnormality through an internal pathological brain disorder.

2. Moderately premature infant is a gestational age period calculated at 31-36 weeks, with birth weights of about 1,000-2,500 grams, and is prevalent among 6-7 percent of live newborns. The frequency of mortality rate is related to gestation age. This indicates that in a low gestational age condition, the mortality rate is high, because of such birth or health complications, as birth asphyxia, respiratory distress syndrome, hypothermia and various types of infection, etc.

3. Borderline premature infant is a gestational age of 36-37 weeks with a birth weight about 2,500-3,250 grams and is found among 16 percent of live newborns. The appearance of such a newborn will be similar as full-term infant. Only a few unusual problems such as those related to respiration, mild temperature changes and sucking difficulties are found.

Characteristics of premature infants

Gestational age determines the different characteristics of premature infants. Premature infants with low gestational age will exhibit distinctive physiological features. Physiological features of a low gestational age infant can be recorded as follows. (Nakphet, K., 1992; Siripun, P.,1990: 66; Wilson, 1994; Seltzer, 1996)

1. The physical size is small and the head appears larger in comparison to the body size. The abdominal circumference is bigger than the chest. The skin is red and immature, with a shiny, transparent appearance that allows the blood vessels beneath to be seen easily. The skin is less red in infant of more than 28 weeks gestational age because of the baby has more fat beneath the skin.

2. Lanugo cover forehead, shoulder, forearm and the back. The hair is fine, woolly and feathery.

3. Less or no vernix caseosa cover the skin.

4. Posture. The premature infant lies in a relaxed attitude, limbs more extended, and can bend arms and legs slowly because muscle tone has not yet developed. Ear cartilage are poorly-developed. The earlobes are soft and easily folded. The nails on the fingers and toes are short and soft.

5. The nipples are small and flat. The sole of the foot appears more turgid and may have only fine wrinkles.

6. Genitalia of females and males are undeveloped. The male infant's scrotum is not pendulous, with few rouge and the testes are in the inguinal canals or in the abdominal cavity. The female infant's clitoris and labia majora are prominent.

7. Muscle tissue and tone has not yet developed. Spontaneous movement will be jerky and asymmetrical. Low gestational age will result in slow movement.

8. A pliable thorax, immature lung tissue and regulatory center lead to periodic breathing, hypoventilation, and apnea. Development of anatomy and physiology of lungs depend on gestational age.

9. Premature infants are unable to maintain body temperature, causing them to have hypothermia. Heat loss occurs because they have an even smaller muscle mass and fewer deposits of brown fat for producing heat and they lack insulating subcutaneous fat.

10. Premature infants have susceptibility to infection because the level of gramma globulin during 4-6 weeks after delivery is low and they have limited ability to produce it.

11. Premature infants have limited iron , so their rapid growth results in anemia.

12. The stomach is small and they have poor digestion. The undeveloped liver cause low bile production, which results in poor fat absorption. Thus, premature infants will have abdominal distention and vomiting.

13. Premature infants have limited to excrete solutions in the urine, such as sodium and chloride which may lead to edema.

14. Reflex activities, swallowing, sneezing and coughing reflexes are absent, weak or ineffectual ; and other neurologic signs are absent or diminished.

Premature infant behaviors

Due to the undeveloped central neverous system, premature infant behaviors are different from full-term infants. Some behavior appearance cannot be represented as their needs and sometimes the meaning is lost. These behaviors are as follows: sleeping and alertness, eating and crying.

Sleeping and Alertness (Kearns, 1996: 57-59 cited by Zaicbkin, 1996; Kenner and Brueggemeyer,1993)

Sleeping and alertness of infants can be classified into 6 states. Each state of behavior indicates the ability to respond to the environment. The description will create more understanding of infant behaviors, resulting in efficient communication between the infants and the mothers. There are 6 states of sleeping and alertness:

Deep sleep or Quiet sleep

In deep sleep, a baby has no physical movement and is unable to respond to external stimuli. The eyes are closed with non-rapid eye movement. A baby breathes regularly, does not move spontaneously but may occasionally startle or jerk. This state is important for physical replenishment and growth.

Light sleep or Active sleep

In light sleep, also known as rapid eye movement (REM) sleep, physical muscle tone decreases. The eyes remain closed, but eye movements can be seen beneath the lids. A baby may fuss during this state and although not fully awake, can be awakened enough to feed. Most premature infants spend most of their time, about 75 percent in light sleep.

Drowsy

In the drowsy state, a baby may move tits arms and legs, and the breathing may become more rapid and shallow. A baby may open and shut the eyes or the eyelids may flutter, and they can slowly respond to

external and internal stimuli. If you speak to a baby or hold him or her in an upright position, a baby may move from drowsiness into the quiet alert state. If you let a baby alone, she or he may go back to sleep.

Quiet alert

In the quiet alert state, a baby breathes irregularly, has a bright look and is able to focus its attention. A baby does not move around much because she or he is paying attention to her or his surroundings. If a baby receives a response to her or his needs such as breast feeding when she or he is hungry or changing its sheet after elimination, she or he will be satisfied. This is the ideal state for interacting with a baby, because she or he is receptive to stimulation. Premature infants can reach the quiet alert state but only for a short time. As a baby matures, the periods of quiet alertness will increase.

Active alert

A baby's activity increases in the active alert state. A baby reacts much to external stimuli, and physical movements increase. Her or his breathing is irregular, and she or he may or may not be fussy. During this state a baby is unable to focus attention and has a decreased tolerance for continued stimulation. If you continue to speak to a baby or try to make eye contact, she or he may cry. Conversely, if you lower your voice or discontinue your interaction, she or he may return to the quiet alter state.

Crying or Fussing

In the crying state, the eyes may open or close. Crying tells you that a baby has not received a response to external and internal stimuli such

as, hunger, pain, heat or cold, wet sheet, or mouth off from the nipple while breast feeding.

Premature infants require 17.57 sleeping hours per day, while the full term infant requires 14.78 sleeping hours per day (Ardura, Anders, Aldana and Revilla, 1995). The awaken cycle of the premature infant and the full term infant are also different; 55 minutes for the premature infants and 90 minutes for the full term infant. In the first 3-4 months after delivery, a premature infant may sleep lightly, awakening every 2 hours during the day. The awakening period is short. Babies, especially premature infants with less 36 weeks gestational age seem to sleep all the time because eyes movement, physical movement, breathing, and muscle tone fail to work in coordination (Aylward,1981).

Eating

The infant's eating behavior is regulated by the development of the central nervous system. Sucking reflex, for example, is a response from internal and external stimulation of the baby. This is important for the physical balance and growth of the baby (Nelms and Mullins, 1982). In the case of an undeveloped central nervous system, the mouth tends to be small and weak. The muscles around it seem to be disconnected between the squeezing of the esophagus. As a result the sucking is weak. Sucking and swallowing delay such as in milk suction is typical among the premature infants in the first 1-2 months. Moreover, the most babies naturally spend most of their time in sleep,

which reduces milk taking. Therefore, the babies should be stimulated to suck milk at least 8 times per day. If a baby sleeps for more than 2-3 hours, she or he must be awakened in order to be fed. When a baby awakes it does not mean that she or he is hungry. However, such indistinct behavior of a baby may confuse the mother who may make a wrong response to the baby's needs.

Crying

Crying is primarily a behavior by which a baby communicates with its mother or baby sitter. The crying of a baby may indicate a baby's unhappiness or a need for attention from the baby sitter. The cause of crying is classified into 5 types by Woff (1983) as follows: hunger, anger, pain, gastrointestinal distress and the need of attention. Lester, et al (1995) proposed two reasons for crying, namely, physical needs, such as the needs of decreasing its tension or to show it is unsatisfied.

The crying behavior of a full term baby increases when his or her age reaches approximately 6 weeks and she or he may express a cry-behavior 2-4 hours per day (on average 2.75 hours per day). The behavior of crying decreases as the baby grows older. On the other hand, the crying behavior of a premature infant often increases when his or her age reaches 3-4 months. The abnormal undeveloped central nervous system of a premature infants causes serious crying behavior, which is difficult to calm (Michelsson, 1971; Schmitt, 1986). Devitto and Goldberg (1979 cited by Yogman ,et al, 1987) mention that the premature infant's crying can not indicate her or his needs distinctively. It is difficult to understand or to know what a premature infant

intends to communicate with the parent by her or his behavior. According to Frodi, Lamb, Leavitt and Donovan (1978), premature infant's crying disturbs and annoys the mother more than the crying of a full term infant.

Premature infants growth

Premature infants growth can be assessed by employing a weighing-scale. Weight at birth will be related to gestational age. Below is a chart, that shows the weight of a newborn in relation to the gestational age:

Table1: The weight of a newborn in relation to the gestational age.

Source: Cross. (1975)

Gestational age (weeks)	Newborn weight mean (Grams)
28	1,130
32	1,890
36	2,790
40	3,415

The weight of a premature infant decreases after delivery, due to the absence of the osmotic pressure of lost water outside the cells. The weight of a premature infant constantly decreases, as compared to the weight of a full term infant, which remains constant for a longer period. In the first year, the weight and the growth of the premature infant occurs rapidly (Karen, et al, 1987:187-202). Karen and Deborah have concluded that an average weight increase rate of a premature infant are present in table 2 and 3.

Table2: The average weight increase rate of a premature infant.

Source: Karen, et al. (1987)

Gestational age	Age 28-32 weeks	Age 32-36 weeks	Age 36-40 weeks
Weight (grams/day)	24	30	28

Table 3: The weight increases of infant when an infant reaches approximately 40 weeks of age.

Source: Karen, et al. (1987)

Age	0-6months	6-12 months	12-24 months	24-26 months
Weight (grams/day)	24	14.4	6.8	5.5

However the premature infant's growth depends on several influencing factors, such as gestational age, newborn weight, food reception, serious level of illness, congenital abnormality, infection, influence of the environment in the household and genes. In the case of high-risk negative influences in these factors or, if the baby receives inappropriate caregiving, this will result in the baby's delayed growth. (Bernbaum, et al, 1989; Swanson and Berseth, 1987) Appropriate care, lack of illness and good nourishment will promote normal growth of these infants.

Fundamental for premature infants caring.

Premature infant are considered as a high-risk group. The mortality rate of this group in the first year is high because of poor health and unsuitable caregiving.

In order to prevent problems and complication, special care must be offered to these infants, such as feeding care, thermoregulation, infection prevention, growth acceleration by massage and touch, common health problems and first aid.

Diet or food

All infants need food to growth. Premature infants require special attention, because prematureness has an effect on the state of unmattered physiology and anatomy of the premature infant at the time of birth; such as undeveloped gastrointestinal tract resulting in poor digestion and absorption, less bile salt relating to deficiency of fat absorption, abnormality of vitamin E absorption, etc. The undeveloped nervous system causes problems in sucking and control in breathing. In addition, two months after delivery, the premature infant's growth rate increases at the rate of 16-22 grams/day, while the growth of a full-term infant is at the rate of 7-11 grams/day. Therefore, the premature infant needs appropriate nutrition that contains adequate nutrients to compensate for the insufficiency that the baby has through birth defect. The baby needs high nutrient, so that he or she can increase the growth rate equal to that of a full-term infant. Thus an appropriate diet for premature infants is essential, by which the infant is able to maintain physiology and immunity (Jeerapat, Kriangsak, 1998). The nutrient of breast milk is significant and suitable for the premature infants.

Protein

Protein content in breast milk of a premature infants is higher when compared to breast milk of a full-term infant during the first month, especially in the first two weeks after delivery. After that the protein content in

breast milk of a premature infants and a full term infant are reduced. Protein content in breast milk is composed of 70 percent whey and 30 percent casein. Powder and cow milk contain 82 percent casein (see table 4). Protein composition found in breast milk, powder milk and cow milk. (see table 5) Protein types in the breast milk are α-lactalbumin, lactoferrin, lysozyme, Ig A and secretory Ig A, all of which prevent infection in a premature infant. Moreover, taurine, carnitine linortiol and nucleotide are also found in breast milk. Taurine promotes the development of the visual function.

Table 4: Elements of milk.

Source: Jeerapat, K. (1998)

Elements	Breast milk	Powder milk	Cow milk
Protein (gram/deciliter)	1	1.5	3.0
Whey/Casein (%)	70/30	18/82	18/82
Nitrogen	25	5	5

Table 5: Elements of whey protein.

Source: Jeerapat, K. (1998)

Elements of whey protein	Breast milk	Powder and Cow milk
Lactoferrin	31.0	0.2
Secretory Ig A	25.0	0.5
Lysozyme	7.0	<0.1
∝-lactalbumin	29.0	18.0
Albumin	7.0	0.6
Ig G	0.2	12.0
Ig M	0.2	0.6
β-lactalbumin	0	62.0

Fat

Fat content of breast milk supplies of energy so that it is suitable for premature infants. This fat is composed of fatty acids that are long chain fatty acids: docosahexacnoic acid or DHA, and arachidonic acid which are vital for retina development and better optical acuity.

Carbohydrate

Elements of carbohydrate in breast milk contain elements, which are lactose and oligosaccharides, that are easily absorbed by premature infants. Oligosaccharides prevent bacteria infection in the intestines.

Nutrients of breast milk such as protein fat and carbohydrate are appropriate and sufficient for premature infants. Besides, there are various elements in breast milk which support intestine growth, peristalsis and stomach development. Specific components of breast milk such as secretory Ig A, lactoferrin, lysozyme, oligosaccharides, macrophage, lymphocyte and neutrophil prevent infection through the enteromammary immune system. In this system, secretory Ig A antibody is immunized when antigen occurs in the mother's body. Breast milk also has this secretory Ig A antibody which premature infant will benefit from and gain specific passive immunity from breast feeding. (Jeerapat, K., 1998: 3)

Breast milk contains higher amounts of certain nutrients that a baby needs, but breast feeding also gives various advantage such as time saving,

facilitating, adequate temperature, cleaning , safety, to create an attachment between mother and infant which helps to promote the progress of infant growth and mentality development, and stimulates oxytocin production which relates to birth control and uterine contraction, and promotes a good shape for the mother because the fat accumulated during pregnancy is being used. In the initiation of breast feeding the mother must try and endure to activate infants to have better suction because premature infant sucking will delay and break periodically.

Maternal preparation in breast feeding to premature infants. (Chattranon, W., 1995: 207-208)

Before breast feeding a mother must wash hands, breasts and nipples well. Positioning of the mother in breast feeding should be comfortable by lying down or sitting. If sitting, mother should sit with a straight back, and pillows may be needed to support the mother's arms in order to help raise the body up to a more comfortable level. The infant is positioned in alignment with the mother's body. The infant's mouth should face the nipple directly and be close enough to take most of the areola in baby's mouth. The flexion of the baby's head should be such that the chin is not on the chest. The mother grasps her breast with her thumb on top and four fingers underneath supporting the weight of her breast for her infant. The rooting reflex should be stimulated by contacting the nipple to baby's lower lip. As the baby latches on, have the mother move the baby closer quickly so that the

baby's mouth covers a large part of the areola. The baby's mouth will remain wide open against the breast, with the lower lip curled out. The baby will have a mouth full of breast, which will include the nipple, much of the areola and all of the underlying tissue including the milk ducts. If the baby only takes the nipple, gently break the sucking and have the baby try again to latch on correctly. Correctly sucking helps the baby to get more milk and to stimulate the milk production of mother. The baby's mouth on the nipple makes the gum press and the tongue contact the nipple strongly, resulting in the mother's nipple trauma appearance.

Offering alternate breasts at breast feeding is an appropriate action, by beginning with the breast that had been sucked the last time. If breast is not engorged, do not remove the hind milk which remains after feeding the previous time. Hind milk is full of high fat and gives high energy. Sucking should be allowed for at last 10 minutes or more per breast in order to stimulate sufficient prolactin and oxytocin production. If breast is engorged, the mother should press out milk from her breast to keep the nipple soft. This is important to allow the baby to suck comfortably. In order to protect her nipples from unnecessary trauma, the mother should slide a finger into the baby's mouth and exert gentle pressure on the lower gum to discontinue suction.

Frequent and correct infants sucking stimulates sufficient milk production. Therefore, the baby should be fed only breast milk for 4-6 months after delivery. Other foods or water are not required. Due to breast

milk's high composition of water (about 87 percent) and low rate of renal solute the baby who receives breast feeding. Dose not need anymore water. Further, lactoferrin within breast milk helps to stop growth of fungus called candida and E. coli which cause diarrhea and thrush for the baby.

Thermoregulation

The body temperature of premature infants fluctuates constantly. Immature neonates have the problem as a result of uncompleted organ system. Premature infants have a smaller muscle mass and fewer deposits of brown fat for producing heat, lack insulating subcutaneous fat, and have poor reflex control of skin capillaries. Premature infants have increased heat loss as compared to a full-term infant. The causes of heat loss are classified into 4 types (Siripun, P., 1990: 67; Moore, 1983) as follows:

1. Conductive heat loss. This heat loss occurs when an infant contacts items such as blankets, bed and the hands of caregivers. Conductive heat loss can be reduced by warming all items.

2. Convective heat loss. This situation occurs when infants are exposed to increased air flow velocity and turbulence.

3. Evaporative heat loss. The infant losses heat by evaporation through the skin and the lungs when breathing.

4. Radiant heart loss. Surroundings with low temperature can influence heat loss of the infant without direct contact. On the contrary, those things with high temperature will radiate heat to the infant.

Prevention of heat loss in the distressed infant is absolutely essential for survival, and maintaining a neutral thermal environment is a challenging aspect of nursing care. Infants who have hypothermia or hyperthermia, are in high-risk conditions such as vasoconstriction, anaerobic metabolism, acidosis, loss of glucose and fatty acid control, hypoglycemia, and urinate frequently, because of production of more cathecolamine. All these problems cause dehydration and weight decrease. (Siripun, P., 1990: 67-68; Thimsuwan, B.,1987:31)

Protection from infection

Premature infants are susceptible to all types of disease and are at a high-risk for infection during the first year of life due to an incomplete immune system, and reduction of immunoglobulin G (Ig G) and immunoglobulin A (Ig A) levels that prevent the respiratory tract infection and gastrointestinal tract infection, including reduction in T lymphocyte that resists virus infection and increases immunoglobulin production. In a natural process, infants receive immunoglobulin G from the mother through the placenta during pregnancy (Sasidharan,1988). Immunoglobulin G level are found at higher levels in full-term infants, about 90-95 percent, while it is lower in premature infants. Lack of which causes physiologic hypogammaglobulinemia. Immunoglobulin G is at the lowest level during the age of 2-4 months and it will be at a constant level until the infant is one year old. That is Ig G is in the ratio of 60 percent in adults (Blackburn,1995). Thus, the first year of an infant is a high-risk period for infection especially in premature infants.

Protection from infection, and caring and the environment are significant. The sources of infection rises in direct relationship of persons and pieces of equipment coming in contact with the infants. Therefore, cleaning of infants regularly is required.

1. Cleaning after soiling. Infants fed with breast milk soil several times each day. She or he has soft, bilirubin and little mucous stools, which is different to, infants fed formula milk who have a hard stool and soil once a day or more. Most infants frequently urinate. After the baby's evacuation, cleaning with absorbent cotton or soft cloth soaked with water should be done immediately, because it might cause irritation to the baby's skin, hypothermia and infection.

2. Bathing and shampooing is good for the baby because it reduces and prevents infection. Besides, it makes the baby feel fresh and comfortable. Bathing should be practiced twice a day, morning and evening before feeding time. The bathing area should be in an area with non-air flow velocity or turbulence. The water temperature should be about 98-100 ° F which can be tested by the elbow or the back of the hand. After the bath, the baby should be wrapped with a towel and dressing in clothes immediately. Skin oil is not necessary for the baby because this will block the skin pores and cause bacteria accumulation. If the baby's skin is dry, the mother can either apply baby lotion after the bath or drop the baby skin oil into the bathing water. Powder is not necessary because this may cause irritation, because of the zinc in the powder. This can also irritate the

breathing apparatus of the baby. If the mother wants to apply powder, the power should be of a type only for babies. It should not be directly poured on the baby's body. It should be poured on the mother's hand and then applied to the baby, so that the powder will not spread into the baby's breathing apparatus. In case a part of the umbilical cord still remains, 70 % alcohol should be applied at the area of the umbilical cord after each bath for about 7-10 days. The area of the umbilical cord will be dry. Alcohol should be applied continually on the area of the umbilical cord until it is totally dried up.

Baby's clothes, sheets and towels should be of soft materials such as cotton, or flannelette. Synthetic yarn clothes should not be used because the hardness in synthetic materials causes irritation and they do not absorb sweat. The sheets for baby should be thick, soft, absorbent and non-synthetic. (Suworakun, S., 1992: 40) Cleaning equipment for the baby should be separated. The cleaning liquid or detergent should be mild so that it will not cause irritation to the baby's skin. The rinsing-water should be changed several times in order to make sure that there is no acid in the detergent left, since it may cause irritation to the baby's skin such as prickly heat and rash.

Growth acceleration by massage and touch.

Massage and touch are the most important to stimulate the nerve pathways under the skin. Massage and touch can stimulate reticular formation which also results in a hypothalamus stimulation. The impulse from the sensory

cortex will pass into the cerebral cortex. The impulse from massage and touch will be delivered through the spinal cord into the reticular formation of cerebellum, hypothalamus and anterior pituitary gland. The anterior pituitary gland produces growth hormone while the hypothalamus is stimulated, that is acceleration of the development of the body's bone and muscle. (Casler, 1965: 143, 161-162; Vetchpad, S., 1978 :245, 247, 307)

Methods of massage and touch.

Massage and touch of hands on the skin is a stimulation. (Blackburn, 1983: 83) This should be done correctly and properly. It is advised, that when beginning and ending the massage and touch, this should be conducted gently. The movement of touch should be very gentle and soft. The palm should touch the skin continuously at all the time. Touching on hairy areas should be done in the same direction of the hair, this prevents hurting. The toucher should be in a comfortable position. The rhythm of touch should be smooth and controllable. A good touch can create the feeling of confidence and relaxation to a person being massaged.

The time for massage and touch should be after the baby has eaten enough and is not sleepy. Thus, the baby feels comfortable and relaxed. The place for conducting a massage and touch should be quiet. The temperature should be maintained at an appropriate level. The light should not be too bright or too dark. The ventilation of the area should be good. (Harrison, 1986: 34) In this study, the researcher uses baby powder as a medium for massage and touch since the powder is ubiquitous and convenient

for use. The powder also increases better feeling of massage and touch. It also keeps the hands of the toucher dry and smooth.

Common health problems and first aid.

The mother should have adequate knowledge and be able to observe various abnormalities. The mother should be in a position to provide basic first-aid. If symptom of any kind do not improve, the infant should be immediately taken for a check-up at the nearest health care location such as Health care center, Public Health Service Center, or a hospital. Abnormal symptoms which are usually found are:

Fever. Fever means the temperature measured from the anus is higher than 37.5 ° C. The cause of fever could be from an infection, dehydration or post received immunization. The solution for the mother is to use a piece of cloth soaked with water and apply this to the body and other areas; such as neck and ankles. This will reduce the heat in the baby's body. Then the infant should be taken to a doctor.

Common cold. The cause of such an illness can be from a virus or bacteria infection. In such a case, a baby may suffer from catarrh, fever, cough and sneeze. The solution for fever is to wipe with a tepid sponge. If the baby has catarrh and has difficulty in breathing, the air way should be cleared by using a small rubber pump for suction. Then, the baby should be taken to see a doctor. A baby should not be taken in to a crowded

area, because he or she might be the carrier of disease or may be infected by a new disease.

Conjunctivitis. This is an eye infection. In such a case, the baby's eye turn red and are filled with tears. There is a lot of discharge, sometimes with pus. It is best for the mother to clean the eyes with absorbent cotton soaked in boiled water. The cleaning technique is to clean from inlet eye to outlet eye, not vice versa. To thoroughly clean the eyes, should be repeated with new absorbent cotton. The baby should then be taken to see a doctor.

Thrush. Sometimes a baby has thrush caused by candida albican, which is a kind of fungus that covers the whole tongue and oral cavity. A small wound may be found around the mouth that cannot be healed easily. This causes the baby difficulty when milk-sucking. The reason for this symptom could be from giving milk mixture without properly cleaning the nipples and milk feeding equipment. In case the symptoms are serious, the baby should be immediately taken to a doctor.

Contact dermatitis. It is found in the area of buttocks, fore legs and lower abdomen. It is caused by contact with urine and feces, which produces chapping, and the chafing of the diaper. The prevention of contact dermatitis can be accomplished by cleaning the area with water, drying it and changing the diaper after each soiling. The skin should be exposed to fresh air from time to time. Clothing the baby all the times cause humidity in certain areas which results in rashes that are difficult to heal. Moreover, the soiled baby's sheet should be separately washed, using only mild detergent or

soap. The most important thing is to change the cleaning water several times to make sure that no dirt is left on clothes and no detergent is present before hanging the sheet in the sunlight. (Potchanamat, C., 1989: 117-118; Siripun, P., 1989: 62-63)

Abdominal distention. This is caused either because these is too much air in the baby's stomach while sucking milk, or because of a malfunction of the gastrointestinal tract system. In its case, where a baby swallows air while being breast fed, it is best for the mother to let the baby's mouth take most of the areola so that there is no space for gas to get into the stomach. To help a baby belch, put the baby on the shoulder or make the baby sit upright leaning in a forward position while gently touching his or her back. If after first aid, the symptoms associated with any abnormality such as vomiting or constipation do not subside, the baby should be taken to see a doctor.

Diarrhea. Diarrhea is caused by gastrointestinal tract infection, or allergy to formula milk or receiving too concentrated formula milk. The baby will have an increase in stool frequency with the stool having increased water content. The color and smell of stool may be abnormal and might have indication of blood and mucous. In the case of acute diarrhea, the baby may have symptoms of dehydration such as sunken eyes, sunken fontanel, or loss of skin turgor. It is best for the mother to continue breast feeding while giving diluted mixed milk to the baby who is fed with mixed milk. In case of a premature infant suffering from these symptoms, it must be

immediately taken to a doctor, because the symptom in a premature infant will be more serious than that of a normal infant.

Constipation. It normally occurs in a baby fed with mixed milk, because the baby cannot digest lactose or some nutrient in the mixed milk. The baby will have difficult bowel movements. Sometimes, there will be signs of blood associated with the stool, because the hard stool might irritate the anus wall. In such a case, the mother should continue to feed more milk, so that the baby will receive more liquid. If the symptoms of vomiting and distention persist for a long time, the infant should be taken to a doctor. Do not SSE or administrate a purgative to an infant.

Vomiting. This is caused by peristalsis of the stomach and abdominal muscle. The reflex of the stomach is to eject the food through the mouth. The vomiting of a premature infant may be caused by imperfect working of the stomach sphincter, or malfunctioning of gastrointestinal tract and nerve system. First aid should be provided while the infant is vomiting by turning the baby's face to one side to prevent it from choking. The mother should collect samples of the vomited food, as this will be useful for doctors or nurses in the medical treatment of the child.

The maternal preparation on knowledge and caregiving behavior towards premature infant after the discharge.

Infants need help with the activity of self-care because they are in the initial period of physical, mental and psychosocial development (Orem, 1985 cited by Hancharoenkun, S., 1990). Because the abilities of the infants are not well-developed, society can not expect infants to have responsibility in making decisions or in taking care of themselves in the same way as adults. Therefore, infants need to be taken care of by the responsible adults (Pathumwan, U., 1996 :190). After delivery of an infant, the mother should have responsibility for the infant's needs such as breastfeeding, soiling, bathing, holding and touching.

In the case of a premature infant, a mother may not be in a position to take care of her infant. Because of a lower gestational age, a baby may show signs of physiologic and anatomic immaturity, therefore the baby may have to be separated from his or her mother. In such a situation a mother may be worried and she may loose confidence in caregiving for her premature infant at home (Gennaro and Brooten,1990: 98). Besides, different disabilities and behaviors of a premature infant may compel the mother to seek advice and help about caregiving at home (Mckim, et al, 1993). Therefore, it is the responsibility of hospital staff to provide assistance and preparation to the mother so she can be in a position to care of her premature infant correctly. In this study, the researcher wants to provide mothers with knowledge, demonstration and practice in the correct care of premature infants at home.

All activities are organized based on Gagne' idea of a learning event. The preparation of maternal matters is to assist the mother to have correct knowledge, understanding and skills about premature infant care after discharge.

Learning.

Learning is the most important process in life. It helps human beings to adapt themselves to society and the changing environment safely and properly. The meaning of learning has been defined as follows:

Baron (1992 cited by Itsarapreda, P., 1995: 196) said that learning means permanently changing behavior or behavior potential which results from experience.

Chan-em (1972: 264) defined the term of learning as the process of the response of the organ to the stimulation. Behavior will be improved appropriately for each situation in order to overcome any obstacles or problems. Therefore learning means changing of behavior as a result of the previous experiences of each individual.

Lahsuwan (1985:252) defined the term of learning as the process of changing the original behavior to a new one permanently. This change result from experiences and training, but not from natural response or instinct, maturity, drugs, accidents or coincident events.

In sum, learning is the process of changing original behavior to a new one permanently. This change results from the body's response to stimulation; training or experiences.

Hanyuth (1989:115-116) defined the importance of leaning as:

1. Learning caused changes in desired behavior.

2. Learning helps one to improve in relation to the situation or environment.

3. Learning increases the efficiency of thinking, feeling and actual behavior.

4. Learning increases experiences in one's life

With regard to the importance of learning, for a person to have a good health state, he or she must have learning. Mager (1968 cited by Binhosen, W., 1993: 34) classified learning behavior into 3 aspects :

1. Behavior on knowledge. Behavior changes from unknown to known. It gives an explanation of what one has learned.

2. Behavior on attitude. Behavior changes from unlike to like. It shows in a person's facial expression such as willingness and interest in something.

3. Behavior on skill. The behavior which is obviously shown in action which is noticed.

The three behaviors have a close relationship with one another. Each behavior cannot happen independently, because it will happen together and rely on another. Developing any one behavior can indirectly lead to other behaviors (Somprayoon, S.,1983: 48). Schwartz found that changing health behavior will have a correlation between knowledge, and attitude and be manifest in 4 conducts (Binhosen, W., 1993: 35).

1. Attitude is a medium for learning and influences practices. Therefore, knowledge on health care of the patient will correlate to attitude and influence practices.

2. Knowledge and attitude have a relationship with each other and they influence practice.

3. Knowledge and attitude can lead to practice without any correlation.

4. Knowledge influences practice directly and indirectly.

Thus providing knowledge to the mother of premature infant will make the mother have knowledge and understanding, and enable her to take care of a premature infant correctly and properly. The learning process will be successful depending on three factors (Hanyuth, O.,1989: 117; Gagne, 1970: 4-5)

1. The learner means the person who shows a response after receiving the stimulus. After the stimulus passes into the five senses such as eyes, ears, nose, tongue and body to the central nerve system and passes to the brain, the learner will translate the stimulus by analyzing and giving meaning which is the quality of each individual.

2. Stimulus or stimulus situation means things or situations which cause stimulation around the body of the learner, such as the teacher or instructor, instruction equipment and other media. These stimuli will stimulate through the senses and influence the learner to give a response. Some stimuli are important for human learning, while the other stimulus situations do not

influence the response. Some stimuli may have an immediate response in different situations.

3. Response means action or behavior which the learner shows when he or she receives the stimulus.

The arranging of activities or events of instruction.

The arranging of activities or events of instruction (Gagne', Briggs and Wager, 1988: 181-195) proposed the idea of instruction that instruction is a set of events external to the learner which are designed to support the internal processes of learning. According to Gagne', a set of events can help a person achieve the objective of the learning, based on the characteristics of each self-learner. There are nine events of instruction, but an individual may not complete all nine events, depending on the learning experience and the thinking process of each individual.

1. Gaining attention is to stimulate the mother's attention to what is being taught. The learner will be led to the topic of study by conversation, or asking for an information situation related to premature infant care.

2. Informing the learners of the objective is to inform the aim of the instruction to the mother. The main objective of the instruction will be clarified at an early period so that the mother can make decisions about the study. Clarifying the objective of the study each time will help the instructor and the mother supervise or check and adjust the objective to be the same.

3. Stimulating recall of prerequisite learned capabilities is to stimulate, support and give chances to the mother to think back to experience related to the topic of the teaching and use it as a comparison in analyzing the new situation. Besides, recall of previously learned capabilities helps in adjusting the understanding and techniques of caring for the baby correctly and properly.

4. Presenting the stimulus material. This particular event supports the mother's learning process by using slides as stimulus material and real persons as medium, such as a premature infant equipment and other equipment in the practices.

5. Providing learning guidance. This event promotes the mother to have a clear understanding about the topic and the practice . They learn about premature infant care by demonstrating and being-given the handbook of premature infant care after the discharge.

6. Eliciting the performance is the mother's real performance after learning about the process and seeing a demonstration from the slide tape. The mother can bring the knowledge into practice and make it later become her skill in premature infant care.

7. Providing feedback about performance correctness are performance evaluation, the explanation to the mother about the correct performance, and the reinforcement of the mother on her correct performance.

8. Assessing performance. This is an assessment of the learning outcome. The instructor may observe and have regular interviews with the mother during intervals and after the learning.

9. Enhancing retention and transfer. This is the learning and teaching arrangement for enhancing the retention of the mother's knowledge and skill. The learner may arrange and bring out their knowledge for use in daily situations.

Bloom and et al classified the learning outcomes or learning behavior of a person into 3 types (Meenanun, L., et al, 1996: 42).

1. Cognitive Domain. It is an ability on knowledge, and understanding, used in daily life, analysis and evaluation.

2. Affective Domain. It is a behavior of perceiving, responding, valuing, arranging the value system, and creating learner's characteristics. It is related to the cognitive domain because one has belief, faith, attachment and self-conscience. These two behaviors are well-integrated.

3. Psycho-motor Domain. It is the capability to use any part of the body to do activities. It is classified into three stages; imitating, practicing and automatic performance.

In conclusion, learning will influence the mother in the development of behaviors in premature infant care on knowledge, attitude, skills and in increasing the ability for premature infant care. It is correlated with the idea of "Process of instruction creates the learning outcomes" and "Learning outcomes are learner capability" (Wachirapornthip, A., 1982: 5).

Preparation forms.

Similar to the instruction, the preparation of a mother who has a premature infant has various forms. Each one contains propriety, and efficiency depending on the objectives and the target group. Therefore, the instructors need to choose the teaching preparation form which fits the topics and the mothers of premature infant. Generally, the main teaching forms are divided into two types.

1. Individual teaching. It is a knowledge-transferring technique which requires face to face contact between the instructor and the learner (Sujamnong, P., 1979: 101). The advantages of this technique are five fold. The first, the instructor knows the actual problems of the learner or the mother individually. therefore, the knowledge given will be in response to the mother's need. The second, the mother can clearly understand and solve her own problems. The third, the evaluation of the learning can be done immediately. The fourth, the instructor can perceive how much the patients need reinforcement and on what aspects. And the last one, a good relationship between the instructor and the learner or the patient can be developed. The patient feels free to consult about her own personal problems. The instructor can know the problems, doubts and dissatisfaction of the mother.

It is clear that individual teaching responds to the interest, capability and each of the patients' needs. Individual factors such as capability, intelligence, need, body condition, emotion, and society are respected. The

disadvantages of this form is that it takes times, needs many instructors and involves high cost.

2. Group teaching. It is a technique aiming to transfer knowledge to a target group of at least two persons up. The instructor can contact many learners at one time. The group can be divided into small groups of 2-3 persons, or bigger groups of 50-100 persons. The advantages of this form are that brain-storming or opinion exchanging among group members and encouragement of behavior change, with many people participating in a class are possible. The disadvantages of this form are that evaluation is difficult in a big group. People with different problems may not have a chance to contact the instructor for solving the problem.

In sum, each teaching form contains advantages and disadvantages in the preparation of mothers who have premature infants. The objectives of the researcher are to provide the mother with the knowledge of characteristics and the behavior, and shared experience of a premature infant care before discharge, so that the mothers feel confident and are able to properly take care of their infants. The problems of a premature infant who does not receive breastfeeding, and the baby's sickness after discharge can be reduced. Each mother has a different capability of learning and different problems of infant care. For practical purpose, the mothers need information and additional advice for solving their problems and specific individual caring methods for each of their children. The researcher has chosen the individual

preparation method for the mother of premature infants. Efficient instruction media will also be added.

Instruction media.

Instruction media means the medium to transfer knowledge from the instructor to the learner, and enable that teaching and learning process to achieve its objectives.

Instruction media helps the learning process and makes the abstract become concrete because the learners' abstractly perceive the learning from the five senses : smell, sight, touch, taste and touch. One percent of learners can sense from the tongue. Some 3.5 percent perceive from the nose, while 1.5 percent can perceive with the touch of their hands. Some 11 percent can perceive by listening and some 83 percent from looking. Previous studies found that the teaching and learning process will be more efficient if the information can be presented to more than one sense. So the instruction media should appeal to combined senses. Neither a single instruction media of sound nor sight is presented (Townsend, 1976: 17; Barrett, 1977: 21). Similarly, Eastman Kodak (1979) stated that we cannot remember and recall all of the data, we encounter only 30 percent of the data by perceiving with the eyes and twenty percent with ears. If the learning process with two combined senses is performed, we can learn about fifty percent. It is affirmed that the use of combined instruction media is effective. A slide tape is included. The researcher used the slide tape with sound as an instruction media of the mother's preparation , so that they can perceive from the pictures and sound at the same

times. The picture and sound will catch their interests. The personal of a health team can also use it immediately and conveniently. The slide can be easily copied and distributed to different places. The learners from every place have equality in learning the same topic. The slide chosen by the researcher can produce pictures which looks real and give the feeling of reality. Not only can slides be easily produced at a low cost, and last long compared to other instruction media such as papers, but they also can be used in the teaching of both groups and individuals.

The slide can be produced easily and it is convenient for use. The value of sound slides are as follow:

1. The slide can change the atmosphere of the classroom. It refreshes and attracts the attention of the learners.

2. The learners can hear the sound simultaneously with seeing the pictures. The learners can understand and remember the lesson. The memory can last longer than using only one instruction media.

3. The slide can be used either for an individual learner or a big group.

4. The lesson in the slide can be replayed or revised for recall or evaluation.

5. The slide can attract the interest of the learner longer than other media. Besides, it creates the feeling of sharing an experience.

6. A sound slide which is produced in accordance with good principles, plans, theory of learning, and theory of psychology can create an efficient learning process.

7. A sound slide can be duplicated and distributed to places. The equality of learning opportunity can be made available regardless of location.

The steps of sound slide production. (Thongwarin, B., n.d: 6)

1. Selecting the topic
2. Writing the objectives
3. Studying the subject matter in detail
4. Writing the script
5. Producing the slide
6. Sound-recording
7. Synchronization
8. Testing and revising
9. Presentation
10. Evaluation

Principles for using slides as an instruction media. (Rassameeprom, W., 1988 :88)

When using a slide as an instruction media it is very important to make it interesting. The length of the slide should not be more than one hour. If it is longer than one hour, it becomes boring. Reminders for using the slide as an instruction media are:

1. Arrange the slides in the tray in order. The mark of topic should be made. The picture should not be up- side down because the words, if there are any, cannot be read.

2. Install the projector, tape recorder and screen in the room properly. The room should be dark enough to make the audiences watch the screen clearly.

3. Check and maintain all the equipment such as a projection bulb are in good condition. A spare projection bulb should be available, in case of emergency.

4. The beginning and the end of the slide should be black because the bright light on the screen may disturb the audience' eyes.

5. The picture shown on the screen should be full size.

6. The projector should be installed upright. The upper and the lower parts of the screen should be even. The projector should be at the same level as the screen.

7. While the last picture is on show, the light in the room should be turned on. This practice prevents the learners seeing the bright light on the screen before the light is on.

According to the study of Aupatam (1987) on the result of providing health care knowledge to patients with clostomy, by using the sound slide. The researcher found that the sample group gained more knowledge than the pre-study period. The difference was statistically significant.

Owing to the impossibility of taking a set of sound slide home for revision purpose, the researcher produced a media in the form of a handbook which is easy-made, cheap and efficient for the learners to revise at home. This media will be given to the mothers of the premature infants on the last day of the training, or after watching the sound slide and the training. The handbook is about the preparation plan of the mother which includes meaning, figures, characteristics and behavior of the premature infant, daily care, observation of abnormality and first aid. The process of producing this handbook is as follows:

1. Select a topic.
2. Evaluate the learner in order to know their needs.
3. Identify the objectives of the handbook.
4. Collect the data and write-it up in response to the objectives.
5. Test and revise the process of the handbook. The handbook is produced under the supervision of the specialists so that the information is concerned with the topic. It will be tested among learners with the same characteristics as the target groups and revised before printing.
6. Printing and binding process. The handbook will include figures and be distributed for use among the target groups.

The handbook can be used as the main and interesting media. The learners may study by themselves at convenient times. The media is not only very useful, but it can also be produced at low cost. It can also be reused several times. The more one reads, the more one will increase ones' reading ability

and understanding of the topic. Therefore the handbook is not used in class so that the patients can learn by themselves. Examples of research on this topic are as follow:

Chareonrat (1988) studied the results of the planned teaching technique on the behavior of one's health care and the health condition of ovarian cancer patients who had received chemotherapy. It was found that in the case of the patients who received the planned teaching and the self health care handbook about the prevention and relief of the side effects of chemotherapy, they have a better behavior of self care than patients who were taught with normal teaching techniques.

Puttapitakphon (1980) studied about advice on thalassemia and the belief towards the health of the spouses who are thalassemia carriers. The findings showed that the women in pregnancy and husbands who received advice from the researcher and who used the handbook, had better knowledge than the pregnantt women and husbands who received the advice from the doctor and other hospital staff.

Kanoksin (1980) studied giving advice to patients with low back pain, by using the mixed media of a VDO cassette and handbook. The findings showed that patients who received advice with the mixed media have better knowledge about their sickness and change their behavior on self care after receiving the advice better than the patients who received the advice from the hospital staff. However, the level of low back pain after relieving advice in the two groups was the same.

CHAPTER III

RESEARCH METHODOLOGY

Introduction and research design

The one group pretest-posttest design was used to determine the effects of maternal preparation on knowledge and caregiving behavior towards premature infants after discharge.

Population and sampling

The population in this study were mothers of premature infants. The samples were selected from the mothers of premature infants who were hospitalized and were scheduled to be discharged. Forty samples were selected by using a purposive sample technique. The criteria of selecting the samples were as follows:

1. The mother was a primigravida and had a premature infant with less than 37 weeks of gestational. The baby weighs from 1,500 grams up. After the diagnosis, no problem on sucking and swallowing by the infant was found.

2. The mother took care the baby by herself after the discharge.

Setting

The mothers of premature infant in this study were recruited from the Pediatrics Unit 3, Buddhachinarach Hospital, Phitsanuloke.

Instrumentation

Two types of instruments had been used in this study: intervention of methodology and data collection.

1. Intervention of preparation.

1.1 The plan for maternal preparation. This plan was conducted 3 times over 3 days for each of the mother of premature infant before discharge. The plan were as follows.

First preparation.

- The researcher introduced herself to the mother of a premature infant.

- The mother was allowed to express her anxiety about caregiving for the premature infant at home. The researcher summarized the problems and the anxiety of the mother. The researcher asked the mother about her experience of breastfeeding, and the observation of the premature infant behavior.

- The researcher informed about the objectives of watching the first part of the sound slides.

- Then, knowledge of a premature infant's characteristics, and behavior of eating, sleeping, crying and soiling were given to the mother. Advice on breastfeeding was also given by the sound slides. (More details were in Appendix C)

- At the end of the sound slides, the researcher asked the question and summarized the slide contents.

- The researcher brought a baby to the mother for train on her breastfeeding skills and to observe the baby's behavior. This process was under the assistance and reinforcement of the researcher. The evaluation of the practice was conducted.

- After the skill training the researcher asked for questions and arranged the schedule of the second preparation.

Second preparation.

- The researcher greeted the mother and discussed her experience of cleaning the premature infant after soiling, shampooing and bathing.

- The researcher informed about the objectives of watching the second part of the sound slides.

- After that, the knowledge on cleaning after soiling, shampooing and bathing were given through the sound slides.(More details were in Appendix C)

- At the end of the sound slides, the researcher asked the questions and summarized the sound slides contents.

- The researcher brought a baby to the mother for train on cleaning after soiling, shampooing and bathing. This process was under the assistance and reinforcement of the researcher. The evaluation of the practice was conducted.

- After that, the researcher trained the mother on breastfeeding skill and reviewed the previously learned knowledge. This process was under the assistance and reinforcement of the researcher. The review was done in order that the mother felt confident on her breastfeeding skills.

- After the skill training, the researcher asked the questions and arranged the schedule of the third preparation.

Third preparation.

- The researcher greeted the mother and discussed her experience of massaging and touching, common health problems and first aid.

- The researcher informed about the objectives of watching the third part of the sound slides.

- Afterwards, the knowledge on massaging and touching, common health problems and first aid, and the necessity of follow up, were given through the sound slides. (More details were in Appendix C)

- At the end of sound slides, the researcher asked the questions and summarized the sound slides contents.

- The researcher brought a baby to the mother for train on massaging and touching. This process was under the assistance and reinforcement of the researcher. The evaluation of the practice was conducted.

- After that, the researcher trained the mother on breastfeeding skill and reviewed the previously learned knowledge. This process was under the assistance and reinforcement of the researcher. The review was done in order that the mother feel confident on her breastfeeding skill.

- After the skill training, the researcher asked the questions and distributed a handbook on premature infants care for the mother.

1.2 A sound slides set. A sound slide was covered all topics related to caregiving to a premature infant. It was produced by the researcher based

on the study of many sources of secondary data such as text books, journals and theses. The sound slides set was divided into 3 parts chronologically.

The first part of the sound slide set focused on the meaning and typical characteristics and behavior of the premature infant. Behaviors of sleeping, soiling, crying, eating and breastfeeding recommendations were included. This part was composed of 52 slides that lasted 25 minutes.

The second part of the sound slide set focuses on cleaning after soiling, shampooing and bathing. This part was composed of 28 slides that lasted 15 minute.

The third part of the sound slide set focused on massage and touch , common health problems and first aid, and the necessity of follow-up. This part was composed of 51 slides and lasted 25 minutes.

1.3 The handbook of caregiving to a premature infant. It contents were in response to the contents of the slide set. The handbook composed of meaning, characteristics, behavior of the premature infant breastfeeding, warming, shampooing, bathing, massage and touch, common health problems and first aid, and the necessity of follow-up.

Quality of the maternal preparation plan, sound slide scripts and the handbook of premature infants care.

Validity.

The researcher presented the maternal preparation plan, slide scripts and the handbook of premature infant care after discharge to experts: a pediatrician,

three pediatrics nursing educators and a registered nurse in pediatrics nursing. They provided recommendations concerning the appropriateness of the contents, the language used and the illustrations. The instruments were revised and used as the instruments for the maternal preparation for a premature infant. (A list of the experts are in Appendix A)

2. Tools for data collection.

2.1 Demographic data was used to obtain some basic maternal and infant information.

Part 1: The maternal information included age, education and occupation.

Part 2 : The infant information included gestational age (calculated from the Ballard score method), birth weight and weight before hospital discharge, and hospitalization time.

2.2 Questionnaire of knowledge on premature infant care. The questionnaire was produced in accordance with the contents of the maternal preparation. It was composed of 25 questions which could be categorized into 4 parts.

Part one (questions 1 to 5) covered the knowledge of premature infants' characteristics and their behaviors.

Part two (questions 6 to 10) covered breastfeeding knowledge.

Part three (questions 11 to 20) covered daily care. It was composed with cleaning after soiling, shampooing, bathing, warming and massage and touch.

Part four (questions 21 to 25) covered common health problems and first aid.

Each questions allowed only one answer. The choices provided were "Yes", "No", "Not sure" and "Don't know".

There were 25 questions (questions 1-25) with "Yes" answers. The criteria of scoring was as follows.

If the sample gave the answer "No", "Not sure" and "Don't know", she received no score.

If the sample gave the answer "Yes", she received one score.

The score of knowledge about premature infant caregiving was collected from the whole questionnaire. The lowest score was 0 and the highest score was 25. The scores received from this questionnaire could be assessed and categorized into 3 levels.

The score level of lower than 50 percent (0-12 scores) shows that the respondent possesses low knowledge of premature infant care.

The score level of between 50-80 percent (13-20 scores) shows that the respondent possesses moderate knowledge of premature infant care.

The score level of more than 80 percent (21 scores up) shows that the respondent possesses high knowledge of premature infant care.

Quality of the questionnaire of knowledge on a premature infant.

Validity.

In order to test the content validity of the questionnaire organized by the researcher, it was proposed to, and checked by experts, a pediatrician, three pediatrics nursing educators and a registered nurse in pediatrics nursing. After the check, the questionnaire was revised according to the recommendations of the above experts. (A list of the experts was in Appendix A)

Reliability.

After the revision of the questionnaire, the reliability produced by the researcher was tested with in 10 qualified samples. The calculation of the reliability was tested by Kuder-Richardson. The formula was as follow (Yuvadee Ruecha, 1997:124) :

$$r_u = \frac{n}{n-1}\left|1 - \frac{Spq}{S_t^2}\right|$$

r_u = Coefficient of validity.

n = Numbers of sample.

p = Proportion of correct answers of each question.

q = Proportion of wrong answers of each question.

S_t^2 = Variance of total scores.

Coefficient of validity of questionnaire = 0.84

2.3 Questionnaire of behaviors on premature infant care. This was produced in order to evaluate maternal behaviors on premature infant care. It was composed of 19 questions which could be categorized into 2 parts;

Part one (questions 1 to 10), was about breastfeeding.

Part two (questions11 to19), was about cleaning after soiling, shampooing, bathing, warming, and massage and touch.

The questionnaire was about maternal behavior on premature infant care. There were 4 levels of answers which were

- Regularly, meaning that the mother followed the stated practices every time when the event occured.

- Frequently, meaning that the mother followed the stated practices most of the times when the event occured.

- Rarely, meaning that the mother sometimes followed the stated practices.

- Not at all, meaning that the mother had stated no practices.

No situation, meaning that the mother had no chance of practice because the events had never occurred.

The respondents had to choose only one choice. A positive choice meaned the right practices while a negative choice meaned the wrong practices.

A positive choice was contained in 15 questions which were the question numbers 1-8, 11-14 and 16-18.

A negative choice was contained in 4 questions which were the question numbers 9, 10, 15 and 19.

The criterias for scoring was as follows:

	Positive statement	Negative statement
- Regularly	4	1
- Frequently	3	2
- Rarely	2	3
- Not at all	1	4

No occurrence; no score is added.

The question numbers 5 and 17 did not have scores. Thus, the score of the mother's behavior on premature infant care received the highest and lowest scores of 68 and 17, respectively. The score was used in behavioral evaluation. The scores were divided into 2 levels

The score level of 80 percent or less (≤54 scores) and have corrected behavior in the question number 5, shows that the respondent had some correct behavior about premature infant care.

The score level of more than 80 percent (>54 scores) and have correct behavior in question number 5, shows that the respondent possessed mostly correct behavior of premature infant care.

Quality of the questionnaire of the maternal behavior on premature infant caregiving.

Validity.

In order to test the content validity of the questionnaire organized by the researcher, it was proposed to, and checked by experts a pediatrician, three

pediatrics nursing educators and a registered nurse in pediatrics nursing. After the check, the questionnaire was revised according to the recommendations of the above experts. (A list of the experts was in Appendix A)

Reliability.

After the revision of the questionnaire, the reliability produced by the researcher was tested with 10 qualified samples. The calculation of the reliability was tested by an alpha coefficient. The formula was as follow (Prakong Kannasut, 1992:47-48) :

$$a = \frac{n}{n-1}\left|1 - \frac{S_i^2}{S_t^2}\right|$$

a = The reliability of the questionnaire.

n = Number of questions in the questionnaire .

S_i^2 = Variance of score of each answer.

S_t^2 = Variance of scores of respondents answering total questions.

The reliability of the questionnaire on the maternal behavior of premature infant care = 0.70

2.4 The record form for the health status of a premature infant after hospital discharge.

This form was producted based on the literature related to the evaluation of the premature infant's health status after hospital discharge. It covered these following topics.

- Weight of the baby (grams) was evaluated one month after discharge. The baby was weighed on a infant-weighing scale. The weight was categorized into 3 levels.

Weight gain of higher than standard refered to the baby's weight gain of more than 22 grams/day on the follow-up days compared to the weight on the day of the discharge.

Weight gain of up to standard refered to the baby's weight gain of during 16-22 grams/day on the follow-up day compared to the weight on the day of the discharge.

Weight gain of lower than standard refered to the baby's weight gain of lower than 16 grams/day on the follow-up day compared to the weight on the day of the discharge.

- The history of illness of the baby after the discharge refered to the sickness and the abnormalities of the premature infant after hospital discharge. It was evaluated by the mother's knowledge and divided into 2 levels.

No sickness meaned no symptoms or any identification of abnormality was found after the day of the discharge.

Sickness meaned symptoms and identifications of abnormality were found after hospital discharge. The seriousness of the sickness was divided into 2 levels. Firstly, light sickness that was the sickness that can be healed by oneself or in a public health care center. Secondly, serious sickness that was the sickness requiring hospitalization.

The evaluation of the baby's sickness, and the first aid assistance provided by the mother focused on conjunctivitis, thrush, abdominal distention, constipation, diarrhea, contact dermatitis, vomiting and fever. The criteria of scoring or evaluation focused on the mother's first aid assistance provided. Described below were considered correct practices. Other practices were considered incorrect practices.

Conjunctivitis. The mother's first aid is to soak the cloth or absorbent cotton in cold boiled water and to clean the eyes, starting from the inlet to the outlet of the eyes. Cleaning back and forth is not allowed. Alternatively, the baby needs to be taken to the doctor.

Thrush. The mother's first aid is to soak the cloth in cold boiled water and to clean the thrush area. Alternatively, the baby need to be taken to the doctor.

Abdominal distention. The mother's first aid is to make belch. The baby should be held by the shoulder. Then, either gently touch the baby's back upward and downward, or tap or hold the baby in the position which allows the baby to bend forward and gently touch the back or take the baby to see the doctor.

Constipation. The first aid is feed more milk to the baby or take the baby to see the doctor.

Diarrhea. The first aid is continued breastfeeding as usual but to focus on cleaning the mother's hands and nipples, or take the baby to see the doctor.

Contact dermatitis. The first aid is to keep the affected area clean and dry, or take the baby to see the doctor.

Vomiting. The first aid is to turn the baby's face to one side to prevent it from choking or take the baby to see the doctor.

Fever. The first aid is to soak the cloth with warm water and used tepid sponge to decrease the baby's temperature, or, take the baby to see the doctor.

Quality of the record form for the health condition of a premature infant after hospital discharge.

Validity.

In order to test the validity of the record form of the health condition of a premature infant after discharge it was proposed to, and checked by experts a pediatrician, three pediatric nursing educators and a registered nurse in pediatric nursing. After the check, the questionnaire was revised according to the recommendations of the above experts.(A list of the experts was in Appendix A)

Data collection procedures.

The data collection was conducted by the researcher. First, an introduction letter for the researcher was sent from Mahidol University to Buddhachinnara Hospital (The study site) in order to ask permission to do research. Details of data collection procedures were as follows.

1. The researcher visited to the head pediatrician, the head of the nursing department, an expert in the pediatric nursing department, and the head of Pediatrics Unit 3 in order to introduce herself and the objectives of the study, and to ask for permission to do research.

2. The researcher cooperated with a pediatrician of Pediatrics Unit 3 in order to know the schedule of premature infants' discharge, lists of infants and the history of the premature infants. The samples were chosen from qualified infants.

3. The researcher introduced herself to the sample. The objectives of the research, and the data collection procedure were informed to the sample. The research was undertaken with the permission of the sample.

4. After having received permission from the sample, the researcher kept a record of general data and asked the sample to fill up the questionnaire on the knowledge of premature infant care. This procedure lasted about 25 minutes. After that an appointment was scheduled 3 days before the discharge. The sample was asked to go to the health education room, Pediatric Unit 3.

5. When the sample arrived, the researcher started the first maternal preparation by asking her to express her anxiety about premature infant care at home. The expression of anxiety was summarized. Next, the researcher asked her about her experience of feeding, and typical characteristics of the baby. After that, the objectives of watching a sound slides set (first time) were given, and informed, the sample watch the slide about the characteristics of a premature infant and its behavior of eating, sleeping, crying, and soiling.

Breastfeeding were also included. After watching the slide, the researcher asked the questions. A baby was taken to mother to practice breastfeeding skill and to observe its behaviors. At the end of the first maternal preparation, the researcher asked the sample to come to the hospital the next day.

6. When the sample arrived, the researcher asked about her experiences of cleaning after soiling, shampooing and bathing. After the objectives of watching a sound slides set (second time) were given, the sample watched the slide about cleaning after soiling, shampooing and bathing. After watching the slide, the researcher asked the question. A baby was taken to the mother to practice baby cleaning techniques and breastfeeding skill was repracticed. At the end of the second maternal preparation, the researcher asked the sample to come to the hospital the next day.

7. When the sample arrived, the researcher asked about her experiences of massage and touch, common health problems and first aid. After the objectives of watching a sound slides set (third time) were presented, the sample watched the slide about massaging and touching, common health problems and first aid, necessity being followed up. After watch the slide, the researcher asked the questions. A baby was taken to the mother to practice massaging and touching. After that, breastfeeding skill was repracticed.

In case of absence by the sample, in which a sample participated in only one maternal preparation, she was eliminated as a sample. If a sample participated in the maternal preparation twice, she was contacted by phone or mail to request her continue the participation. After two attempts to contact

the absent sample,and no response was received, she was discharged from the sample group.

8. At the end of the third maternal preparation, the sample was requested to fill up the questionnaire about premature infant care (the same questionnaire as before the maternal preparation). It took about 24 minutes. After that a handbook of premature infant care was given to each of the sample. The follow up schedule (1 month after hospital discharge) and venue was informed to the sample. The date of the follow up was recorded in the hospital identity card.

9. On the day of the appointment (1 month after hospital discharge), the researcher asked the sample to fill the questionnaire about the mother's behavior on premature infant care. It took 40-50 minutes. The researcher recorded the health status of the premature infant before the infant was checked by a doctor. After that, the researcher was available for discussion with the sample. At the end, the researcher thanked her for cooperation in the research.

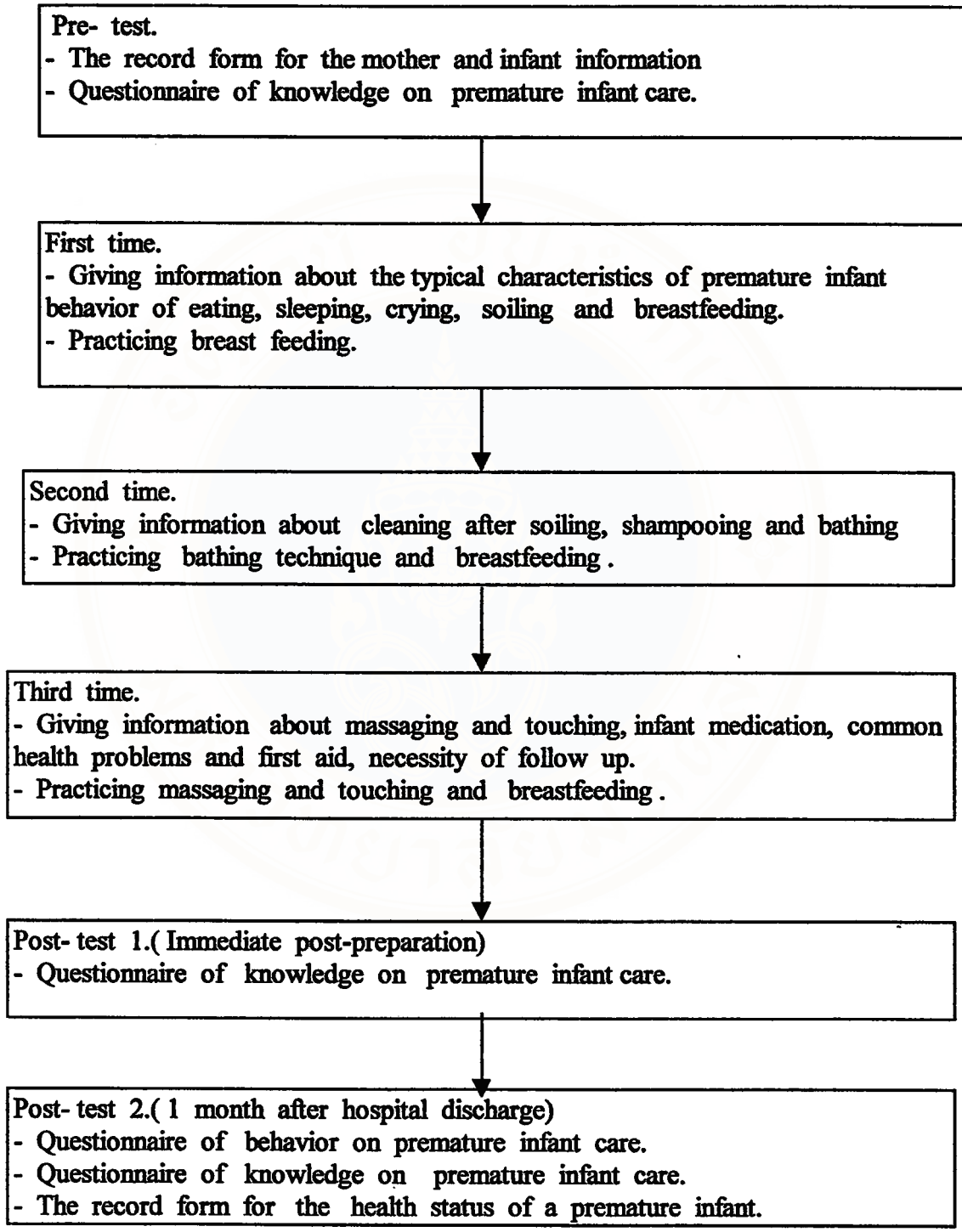

Figure 2 : Plan for data collection procedure.

Data analysis.

The researcher analyzed the data using the Statistical Package for Social Science. As follow:

1.The general information about the mothers and the premature infants was analyzed by statistics of frequency and percentage.

2. The score of knowledge about caregiving for the premature infant by the samples in the pre-preparation, immediate post-preparation and one month after hospital discharge was analyzed by statistics of frequency and percentage.

3. The comparison of the mean score of mothers' knowledge about premature infants caregiving between pre-preparation, immediate post-preparation and 1 months after hospital discharge were analyzed by t-Test.

4. The scores of the mothers' caregiving behavior towards premature infants in 1 month after hospital discharge was analyzed by statistics of frequency and percentage.

5. The relationships between the score of knowledge and the score of behavior on premature infant care 1 month after hospital discharge were analyzed by Pearson's Product Moment Correlation coefficient.

CHAPTER IV

Results

The effects of maternal preparation on knowledge and caregiving behaviors towards premature infants after discharge was studied. A sample of 40 subjects whose infants were hospitalized in Pediatrics Unit 3, Buddhachinarach Hospital, Phitsanulok Province. The results of this study will be presented in 4 parts by mean of tables and description.

Part 1 The analysis of demography data about the mothers and the premature infants were presented in tables 6-8.

Part 2 The analysis of the mothers' knowledge scores about caregiving for the premature infant in the pre-preparation, immediate post-preparation and 1 month after hospital discharge were presented in tables 9-14.

Part 3 The analysis of the scores of the mothers' caregiving behavior towards premature infants at 1 month after hospital discharge were presented in tables 15-16.

Part 4 The relationships between maternal behavior and maternal knowledge at 1 month after hospital discharge were presented in table 17.

Part 1 Demographic data of the mothers and the premature infants were presented in tables 6-8.

Table 6 Demographic data of the mothers. (n=40)

Characteristics	Frequency	Percentage (%)
Age		
- 15-19 years	9	22.5
- 20-24 years	11	27.5
- 25-29 years	13	32.5
- 30-34 years	2	5.0
- 35-40 years	5	12.5
(X= 24.85 ,S.D.= 6.73)		
Education level		
- Primary school	24	60.0
- Secondary school	5	12.5
- Vocational level or diploma	8	20.0
- Graduate level or higher	3	7.5
Occupation		
- Housewife	18	45.0
- Working	22	55.0
Received any knowledge on premature infant care.		
- Yes	2	5.0
- No	38	95.0

Table 6, showed that most mothers (32.5%) were 25-29 years old, whose level of education was finished primary school for 60.0%. Most mothers were worked (55.0%) and had no knowledge on premature infant care (95.0%).

Table 7 Demographic data of the infants. (n=40)

Characteristics	Frequency	Percentage (%)
Gestational age at delivery		
- 28-31 weeks	2	5.0
- 32-36 weeks	38	95.0
(X= 34.35 ,S.D.= 1.61)		
Birth weight		
- < 1,500 grams	3	7.5
- 1,500-1,999 grams	13	32.5
- 2,000-2,499 grams	21	52.5
- ≥ 2,500 grams	3	7.5
(X= 1,977.75 ,S.D.= 373.32)		
Weight before hospital discharge		
- 1,500-1,999 grams	19	47.5
- 2,000-2,499 grams	18	45.0
- 2,500-2,999 grams	3	7.5
(X= 2,010.00 ,S.D.= 264.38)		
Hospitalization time		
- 1-15 days	28	70.0
- 16-30 days	8	20.0
- 31-40 days	4	10.0
(X= 13.25,S.D.=10.06)		

Table 7, showed that most infants (95.0%) were 32-36 weeks of gestational. Most infants of birth weight (52.5%) were between 2,000-2,499 grams and at time of hospital discharge most infants (47.5%) were 1,500-1,999 grams. Most infants (70 %) had hospital stay for 1-15 days.

Table 8 Demographic data on weight and illness of the premature infants.(n=40)

Variables	Frequency	Percentage (%)
Change of weight		
- Lower than standard (<16.00 grams/day)	3	7.5
- Up to standard (16.00-22.00 grams/day)	13	32.5
- Higher than standard (>22.00 grams/day)	24	60.0
Illness after hospital discharge		
- No	9	22.5
- Yes	31	77.5
- Abdominal distention	18	45.0
- Contact dermatitis	10	25.0
- Vomiting	7	17.5
- other. (common cold, cough)	6	15.0
- Diarrhea	5	12.5
- Fever	5	12.5
- Thrush	4	10.0
- Conjunctivitis	1	2.5

Table 8, showed changes of body weight 60.0% gained weight a higher rate than standard. Regarding the illness history of the premature infants, 22.5 % had no illness while 77.5 % had illness. The most were abdominal distention. (45.0%).

Part 2 The analysis of the mothers' knowledge scores about caregiving for the premature infant in the pre-preparation, immediate post-preparation and 1 month after hospital discharge were presented in tables 9-14.

Table 9 Mothers' knowledge level on premature infants caregiving at pre-preparation, immediate post-preparation and 1 month after hospital discharge. (n=40)

Level of knowledge on premature infants caregiving	pre-preparation (n/%)	immediate post-preparation (n/%)	1 months after hospital discharge (n/%)
- High	0/0	40/100	40/100
- Moderate	2/ 5	0/0	0/0
- Low	38/95	0/0	0/0

Table 9, it was seen that 38 mothers (95.0%) had low knowledge on premature infant care before joining in the preparation program.

Immediate post-preparation , it was conversely found that the mothers possessed high knowledge on premature infant care.

One month after hospital discharge, all of the mothers (100.0%) still maintained knowledge about premature infant care.

Table 10 Correct answers about characteristics and behavior of premature infants at pre-preparation, immediate post-preparation and 1 month after hospital discharge. (n=40)

Characteristics and behavior of premature infants.	Knowledge of premature infant caregiving		
	pre -preparation (n/%)	immediate post -preparation (n/%)	1 month after hospital discharge (n/%)
-Breast-fed babies had more frequent defecation per day.	17/42.5	40/100	40/100
-Prolonged crying in baby with sobbings showing unpleasant condition.	15/37.5	36/90.0	40/100
-A baby spends almost time sleeping.	2/5.0	40/100	40/100
-If a baby did not receive milk for a long time, it may cause hypoglycemia.	2/5.0	39/97.5	40/100
-A baby sucks slowly and easily falls asleeping during breastfeeding.	2/5.0	40/100	40/100

Table 10, showed that more than 20 mothers at pre-preparation possessed incorrect knowledge of all topics.

Immediate post-preparation, all of the mothers had gained more knowledge. One mother gave a wrong on hypoglycemia. Four mothers gave a wrong on the crying characteristic. Later, the researcher provided additional advice.

One month after hospital discharge, it was found that all mothers had gained more knowledge compared to pre-preparation and immediate post-preparation.

Table 11 Correct answers about breastfeeding of premature infants at pre-preparation, immediate post-preparation and 1 month after hospital discharge. (n=40)

Breastfeeding.	Knowledge of premature infant caregiving		
	pre -preparation (n/%)	immediate post -preparation (n/%)	1 month after hospital discharge (n/%)
-The best milk for premature infant in first 4 months is breast milk.	37/92.5	40/100	40/100
-Belching after feeding prevents abdominal distention.	24/60	40/100	40/100
-Breast milk contains sufficient nutrients for a premature infant's need.	12/30.0	39/97.5	40/100
-Breastfeeding every 2-3 hours can accelerate milk production.	12/30.0	40/100	40/100
-Gently pressing the infant's chin before removing the nipple helped protect the nipple from trauma.	1 /2.5	40/100	40/100
- Feeding with alternate breast by sucking all milk from each breast.	0/0	40/100	40/100

Table 11, showed that more than 20 mothers at pre-preparation had incorrect knowledge about the value of the breast milk , the accelerate milk production and protection of the nipple from trauma.

Immediate post-preparation, each mothers had gained more knowledge, except on breast milk contains sufficient nutrients for a premature infant's need. Later, the researcher provided additional advice.

One month after hospital discharge, each mother had gained more knowledge compared to pre-preparation and immediate post-preparation.

Table 12 Correct answers about daily care of premature infants at pre-preparation, immediate post-preparation and 1 month after hospital discharge. (n=40)

Daily care	Knowledge of premature infant caregiving		
	pre -preparation (n/%)	immediate post -preparation (n/%)	1 month after hospital discharge (n/%)
-Cleansing after soiling.	27/67.5	40/100	40/100
-Testing the water temperature before bathe.	24/60.0	40/100	40/100
-Taking a baby into a crowded area can contact disease and cause illness.	22/55	40/100	40/100
-Bathing should be done once daily.	21/52.5	40/100	40/100
-The baby's cleansing method is to clean from the inlet to the outlet of the eyes. Don't cleaning back and forth.	11/27.5	40/100	40/100
-Accelerating baby growth and development by massaging and touching.	1 /2.5	40/100	40/100
-Increases the baby's appetite and sleeping hours by massaging and touching.	1 /2.5	40/100	40/100
-Premature infant cannot control its own body temperature caused hypothermia.	0 /0	38/95.0	39/97.5
-Stopping massaging and touching if the baby cried.	0 /0	40/100	40/100

Table 12, showed that all mothers at pre-preparation possessed incorrect knowledge about control its own body temperature and stopped massaging and touching if the baby cried. More than 20 mothers had incorrect knowledge on the eye cleansing method and the usefulness of massaging and touching.

Immediate post-preparation, almost all of the mothers had more knowledge. Two mothers gave a wrong on the temperature control. Later, the researcher provided additional information on this topic again.

One month after hospital discharge, most mothers possessed more knowledge compared to pre-preparation and immediate post-preparation. Only one mother gave a wrong response on temperature control.

Table 13 Correct answers about common health problems and first aid of premature infants at pre-preparation, immediate post-preparation and 1 month after hospital discharge. (n=40)

Common health problems and first aid.	Knowledge of premature infant caregiving		
	pre -preparation (n/%)	immediate post -preparation (n/%)	1 month after hospital discharge (n/%)
-Cleaned with water and dried when having contact dermatitis.	23/57.5	40/100	40/100
-Reduced the baby's heat from a fever by tepid sponge.	18/45	40/100	40/100
-Much discharge in a baby's nose blocks the respiratory tract and causes difficulties in milk intake.	13/32.5	40/100	40/100
-Diarrhea symptoms mean frequent stool with an increased water content, changed color and smell :blood stained may also be present.	6/15.0	40/100	39/97.5
-Thrush on the tongue and mouth cannot be removed. It is caused by fungi.	2/5.0	40/100	40/100

Table 13, showed that more than 20 mothers at pre-preparation possessed incorrect knowledge about the definition of thrush and diarrhea, the problem of much discharge in a baby's nose, and correct treatment when the infant had fever.

One month after hospital discharge, all mothers gained more knowledge compared to pre-preparation and immediate post-preparation. One mother gave the wrong answer on the topic about the definition of diarrhea.

Table 14 Comparison of the mean score of mothers' knowledge on premature infants caregiving between pre-preparation and immediate post-preparation, immediate post-preparation and 1 months after hospital discharge. The data were analyzed using t-Test. (n=40)

Knowledge of premature infant caregiving.	$\bar{X}$	S.D	t
- pre-preparation	7.32	3.407	32.76***
- immediate post-preparation	24.80	0.464	
- immediate post-preparation	24.80	0.464	1.64 ^{ns}
- 1 month after hospital discharge	24.95	0.316	

***(P<.001), ^{ns} (P>.05)

Table 14, showed that the mean score of mothers' knowledge on premature infant care in immediate post-preparation was higher than pre-preparation with a statistically significant difference (P<.001). Thus, the mothers who participated in the preparation , gained more correct knowledge on premature infant care.

The mean score of mothers' knowledge on the premature infant care of the mothers 1 month after hospital discharge was higher than immediate post-preparation with a statistically non-significant difference (P>.05). Thus, it was indicated that the mothers who participated in the preparation, remained equally knowledgeable after discharge for a month compared with immediate post-preparation.

Part 3 The analysis of the mothers' caregiving behavior scores towards premature infants in 1 month after discharge was presented in tables 15-16

Table 15 Breastfeeding behavior towards premature infants at 1 month after discharge. (n=40)

Breastfeeding	Behavior of premature infants caregiving				
	Regularly (n/%)	Frequently (n/%)	Rarely (n/%)	Not at all (n/%)	No situation (n/%)
-Waking the baby to continue sucking, if he/she falls asleep.	35/87.5	5/12.2	-	-	-
-Washing your hands before breastfeeding.	24/60.0	16/40.0	-	-	-
-Lying in alignment with the mothers' baby, the mouth should face the nipple.	40/100	-	-	-	-
- During breastfeeding, the baby's mouth should cover the areola.	35/87.5	5/12.5	-	-	-
-Pressing infants' chin to open the mouth before removing the nipple. ##	31/77.5	3/7.5	1/ 2.4	-	5/12.5 # # (baby open mouth by him/herself)
-Belching after breastfeeding.	24/60.0	16/40.0	-	-	-

Not scored.

Table 15 (continue) Breastfeeding behavior towards premature infants at 1 month after discharge . (n=40)

. Breastfeeding	Behavior of premature infants caregiving				
	Regularly (n/%)	Frequently (n/%)	Rarely (n/%)	Not at all (n/%)	No situation (n/%)
-Feed the baby from both breasts with all milk from each breast .	33/82.5	-	7/17.5	-	-
-Received adequate nutrition duration breastfed.	36/90.0	1/ 2.5	2/5.0	1/2.5	-
-Drinking alcohol or a combination of drugs or medicine for uterine contraction.	8/20.0	2/5.0	-	30/75.0	-
-Except for breast milk, your baby was also fed by water, formula milk or supplementary food.	13/32.5 (Breastfeeding = 5, Breastfeeding and water =16 ,Breastfeeding , water and formula milk =18, Breastfeeding, water and supplementary food =1)	11/27.5	11 /27.5	5/12.5	-

Table 15, showed that more than 20 mothers performed correct behavior in all topics except that the mothers also fed water, formula milk or supplementary food to their babies.

Table 16 Daily care behavior towards premature infants at 1 month after discharge. (n=40)

Daily care	Behavior of premature infants caregiving				
	Regularly (n/%)	Frequently (n/%)	Rarely (n/%)	Not at all (n/%)	No situation (n/%)
-Bathing your baby at least once daily.	40/100.0	-	-	-	-
-Mild soap, shampoo and powder for baby.	40/100.0	-	-	-	-
-While bathing, observed your baby's illness such as conjunctivitis, rash.	40/100.0	-	-	-	-
-Wrapping your baby with a towel.	6/15.0	4/10.0	6/15.0	24/60.0	-
-Smiling and talking with your baby, While you were massaging.	37/92.5	1/ 2.5	2/5.0	-	-
-Cleaning your baby with water after soiling.	34/85.0	6/15.0	-	-	-
-Massaging and touching your baby.	21/52.5	12/30	7/17.5	-	-
-Taking your baby to a crowded area.	-	-	-	-	40/100.0
-Stoped to massaging and touching when your baby cried.##	21/52.5	-	-	-	19/47.5

Not scored.

Table 16, showed that more than 20 samples performed correct daily premature infant care in all topics.

Part 4 The relationships between maternal behavior and maternal knowledge at 1 month after hospital discharge were presented in table 17.

Table 17. The relationships between the score of knowledge and behavior on premature infant care 1 month after hospital discharge; analyzed by Pearson's Product Moment Correlation coefficient. (n=40)

Variables	X	S.D.	r
- maternal knowledge at 1 month after hospital discharge	24.95	0.32	.338*
- maternal behavior at 1 month after hospital discharge	62.17	3.92	

*(P<.05)

Table 17, showed that the mean score of knowledge was 24.95 and the standard deviation was 0.32. The mean of the maternal behavior was 62.17 and the standard deviation was 3.92. The score of knowledge is related to the score of the premature infant care behavior 1 month after hospital discharge with statistically significant difference (P< .05).

CHAPTER V

DISCUSSION

In this chapter finding of the study would be discussed according to these assumptions. There are two section. First, maternal knowledge scores at immediate post-preparation was higher than pre-preparation. Second, maternal knowledge was related to maternal caregiving behavior at one month after hospital discharge.

Hypothesis 1 : Maternal knowledge scores at immediate post-preparation was higher than pre-preparation.

The mean score of mothers' knowledge on premature infant care in the immediate post-preparation was higher than in pre-preparation with statistically significant difference ($P < .001$). This result supported the hypothesis 1. The details of discussion concerning these outcomes will be presented later.

First this preparation covered the knowledge on a premature infant care presented by sound slides as the media of instruction. The pictures were shown in order to stimulate for maternal knowledge and comprehension. Townsend (1976) and Barrett (1977) stated that the learning process would be more efficient if instruction media were used for the learners which could stimulate more than one sense perception. Similarly, Eastman Kodak (1979) stated that we can not learn and remember all the information we are taught. We can

remember only 30 % through eye perception and 20 % through ear perception. If we can learn through both these 2 senses of perception, we can learn and remember up to 50%. This finding supported the study of Oapathum, P.(1987) who studied the result of the health knowledge provided to patients with colostomy through sound slides. She found that the study group gained more knowledge from sound slides compared to the pre-learning period with some statistical significance.

Second , the researcher distributed a handbook about a premature infant care to the mothers after maternal preparation. This handbook could be used to review the knowledge already acquired at home, and used to solve some problems which might occur after hospital discharge of the mothers. This finding correlated with the study of Chareonrat, H. (1988) which showed that cancer patients treated with chemotherapy who were properly trained and who had been given a handbook on the knowledge of self-care to protect and relieve themselves from the side effects of the chemical, could take care of themselves better than those with normal training without a handbook. In addition, Puttapitakpol, S. (1989) found that pregnant women and their husbands who received advice and a handbook on thalassemia had more knowledge than those who received advice from the hospital officers.

Third, the mothers in this study were primigravidarum. 95% of the mothers had no knowledge on premature infant care.

Finally, the characteristics of premature infant were different from term infant. Thus, the mothers should have eager and paid attention in maternal preparation. As

the result of preparation, the mothers gained more knowledge and felt confident in premature infant care.

Regarding at pre-preparation, 95% and 5% of the sample possessed low and moderate levels of knowledge respectively. The topics on which the mothers gave totally wrong responses were breastfeeding, thermoregulation and stop massaging and touching when the baby cried or was uncooperative. Only one mother gave the correct response on the prevention of trauma during breastfeeding, growth acceleration and development for the infant and benefits of massaging and touching, respectively. Immediate post-preparation, all of the mothers (100%) possessed a high level of knowledge regarding premature infant care. Four mothers gave wrong responses on the crying characteristics of babies and only one mother gave wrong responses on 2 topics of low sugar level in blood, and the value of breast milk to a premature infant. One month after hospital discharge, all mothers (100%) possessed a high level of knowledge. Only one gave a wrong response on 2 topics of thermoregulation for the premature infant and the definition of diarrhea.

The findings showed that the preparation for the mothers through the sound slide and the handbook, and practicing could enhance the maternal learning process, skill and memory. The knowledge on premature infant care at immediate post- preparation was higher than that in the pre-preparation with statistic significance. The findings showed that the mothers had gained more comprehension after the one month practicing with the premature infant.

The researcher improved the style of the preparation of the mothers and arranged it into individual preparation. There were many reason for individual

preparation. 1) the numbers of the premature infant were limited. 2) hospitalization duration and discharge dates were varied depending on each of the infant's problems. 3) longer hospitalization could cause infection to the baby and higher hospital payment. 4) the breastfeeding preparation was unique. For example, some of the babies had difficulties in sucking and swallowing when being trained. The breastfeeding of such infants would need longer time. The mothers had never squeezed out milk while the babies were hospitalized, so that would cause a low production of milk. When they were discharged, the mothers were complained of "dry milk", and "less milk product and probably not enough for the baby". This behavior represented lack of maternal confidence in breastfeeding. 5) during child bathing , some of the mothers were afraid of handling the babies because of the small size of the babies and maternal inexperience of baby bathing.

Therefore, the researcher conducted the individual preparation. This preparation provided more opportunity for the mother to learn more about the infant care at their full capacity. They can learn to solve their problems and build up their skill on child care in response to the need of their babies. During the preparation, the researcher could give advice and solve problems regarding each of the mothers' and babies need. The mother not only gained more knowledge but also felt more confident about premature infant care.

Hypothesis 2 : Maternal knowledge was related to maternal caregiving behavior at one month after hospital discharge.

The score of knowledge was related to the score of behavior 1 month after hospital discharge with a statistically significant difference ($P < .05$). This finding supported the hypothesis 2. The mothers who possessed the correct knowledge about premature infant care would have correct behavior regarding premature infant care. In contrast, the mothers who possessed the incorrect knowledge about premature infant care would have wrong behavior regarding premature infant care. Bloom (1971: 201) stated that one's knowledge component was influential to behavior. Apart from knowledge were facts, rules and other details which one could perceive, and accumulate (Good, 1973: 325). Similarly, Pongchaturavit, U. and Chinnawuth, S.(1994) who studied the relationship between knowledge, attitude and behavior on the health of mothers who had diarrhea in Chonburi Hospital. The correlation was positive with some statistical significance ($P<.001$)

The mothers who had correct knowledge about breastfeeding such as rooting reflex, belching after breastfeeding, expressing milk in order to prevent dry milk, protecting the nipple from trauma, and proper behavior while breastfeeding had correct and proper ways of breastfeeding. The mothers who had correct knowledge on daily child care such as preventing babies from infection such as cleaning after soiling, bathing, avoided bringing a baby in a crowded area, warm keeping and the benefits of touching and massaging would have proper and correct behavior on daily infant care as well.

Regarding the knowledge about a premature infant care after hospital discharge, one mother gave wrong responses on hypothermia and the definition of diarrhea. This can be explained because the babies had no sign of this mentioned abnormalities while they were hospitalized and after hospital discharge that was why the mother forgot about the acquired knowledge during the preparation. Besides, she had reviewed the handbook distributed to them after hospital discharge. Therefore, the researcher should provide additional advice on these topics.

Regarding the behavior about premature infant care after discharge, some of the mothers had improper behavior. First, feeding, 21 infants had breastfeeding while the other 18 infants had both breastfeeding and formula feeding. Only one had breastfeeding, formula feeding and supplementary food. Because of the poor health of the babies at birth and long hospitalization period and mothers' inability to breastfeeding after birth of the babies, the mothers did not feel confident about breastfeeding and were afraid that the milk production would be insufficient for the premature infants. Jeerapat, K. (n.p.) stated that the guidelines for successful breastfeeding, were derived from the mother's psychological health, biological health and social health. Another successful factor on the milk flow was to allow the mother to breast-feed the baby immediately after the birth, with the right technique of breastfeeding and milk removal. When the mothers who knew nothing about the breastfeeding attended the preparation, they had problems in accelerating milk production and lacked of confidence on breastfeeding. Therefore, because of the high numbers of sick babies and insufficient number of staff in the hospital, the babies were

bottle-fed. The babies felt satisfied with the teat and confused with the mother's breast. As a result, breastfeeding failed.

Husband and household members were influential persons in breastfeeding. The additional interview data showed that husbands and relatives bought milk for the mothers. Some reasoned that the "baby refuses the mother's milk", "the baby cries persistently because he may not have enough milk". "Being offered the milk bottle, the baby seems willing to accept", "the breast size is small, and the milk production is not enough for the baby" , and "see the grandchild is small and want him/her to grow faster". All of these statement influenced the mother's confidence and breastfeeding. These problems needed to be solved by closely following up and cooperation from husbands and relatives. The preparation took place only 3 days before hospital discharge without continuous follow-up, Therefore the mothers decided to accept the offered formula feeding to their babies.

Second, drinking alcohol combination of drug for uterine contraction, it was found that 38 mothers (75%) had not drug it, 8 mothers (20%) had drug with mixture of alcohol. regularly and 2 mothers (5%) frequently. From ancient time, Thai and Chinese culture made one believed that drug with mixture of alcohol Will be beneficial for maternal health, early uterine involution. So this belief may influence maternal behavior.

Regarding the weight of a premature infant after hospital discharge, 7.5 % of babies gained more weight but with less than the standard (<16.00 grams/day), 32.5 % were equal to the standard (16.00-22.00 grams/day) and 60.0% were higher than the standard (>22.00 grams/day). Considering the

Product Moment Correlation coefficient. Result from this study showed that:

1. With regard to the characteristics of the mothers, most mothers (32.5%) were 25-29 years old, whose level of education was finished primary school for 60.0%. Most mothers were worked (55.0%) and had no knowledge on premature infant care (95.0%). Regarding the characteristics of the premature

bottle-fed. The babies felt satisfied with the teat and confused with the mother's breast. As a result, breastfeeding failed.

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weight gain of the babies at 3 different levels, and the mothers' behavior about premature infant caregiving, it was found that the mothers who had almost correct behavior according to the 3 different weight gain were 2, 13 and 21 samples respectively. The mothers who had some correct behavior were 1, 0 and 3 samples respectively. In addition, only breastfeeding resulted in the weight gain 13.33-30.00 grams / day, the weight gain by breast milk and formula milk feeding were 13.33-38.33 grams / day and the weight gain by breast milk and supplementary food feeding were 33.33 grams / day.

With regard to the illness of a premature infant, after hospital discharge, 22.5% of the infants had no illness and some 77.5% had illness. Three infants were hospitalized, one of the infants had epilepsy caused by low calcium (7 days of hospitalization), one infant had sepsis (1 day of hospitalization) and the other one sucked less milk due to congenital teeth (3 days of hospitalization). 31 of the premature infants were treated at home. Most of them had illness with abdominal distention (45.0%), contact dermatitis (25.0%), vomiting (17.5%), others such as cold, or cough (15.0%), diarrhea (12.5%), and fever (12.5%), thrush (10.0%), conjunctivitis (2.5%).

From statistic point of view in symptoms and disease, vomiting is the most prevalent cause of gastrointestinal tract symptoms. In such a case, sever vomiting many result in weight loss. Surprisingly, the result of the study showed that all infants had gained weight in spite of vomiting. It showed be noted that these infants might experience possetting but not which could explain the infants' weight gain instead of weight loss.

To consider, the premature infants who had illness and those who had no illness, and the mothers' behavior on caregiving, it was found that 27 mothers performed almost correct behaviors, 9 mothers had incorrect behaviors and 4 mothers had some correct behaviors. The analysis of the cause of the illness indicated that some incorrect behavior on caregiving, the changeable weather at that time, the change of mother's diets, and the babies care by others were all causes of illness. All mothers of the premature infants could perform correct treatment at home.

CHAPTER VI

CONCLUSION AND SUGGESTIONS

Summary of the study

The study was quasi- experimental research. The purpose was to study the effects of the maternal preparation on knowledge and caregiving behavior towards premature infants after hospital discharge. The samples of the study were 40 mothers of premature infants who were hospitalized in the Pediatrics Unit 3, Buddhachinarach Hospital and scheduled to be discharged from March, 1999 to August, 1999.

The instruments used in this study were the maternal preparation plan, a sound slide set about premature infant caregiving and a handbook of caregiving for premature infants. The instruments for data collection consisted of a demographic data form, the questionnaire of knowledge about premature infant care , the questionnaire of behaviors on premature infant caregiving, and the record form of the health status of premature infant after hospital discharge. The data was analyzed by using percentage, mean, t-Test and. Pearson's Product Moment Correlation coefficient. Result from this study showed that:

1. With regard to the characteristics of the mothers, most mothers (32.5%) were 25-29 years old, whose level of education was finished primary school for 60.0%. Most mothers were worked (55.0%) and had no knowledge on premature infant care (95.0%). Regarding the characteristics of the premature

infants, most infants (95.0%) were 32-36 weeks of gestational. Most infants of birth weight (52.5%) were between 2,000-2,499 grams and at time of hospital discharge most infants (47.5%) were 1,500-1,999 grams. Most infants (70 %) had hospital stay for 1-15 days.

2. At pre-preparation, almost all mothers possessed incorrect knowledge on premature infant care. Immediate post-preparation, each of the mothers had gained more knowledge on premature infant care except on the value of the breast milk, and temperature control. One month after hospital discharge, each mother had gained more knowledge in all topics compared to pre-preparation, and immediate post- preparation. One mother gave the wrong response on temperature control and the definition of diarrhea.

3. The mean score of mothers' knowledge on premature infant care in immediate post-preparation was higher than pre-preparation with a statistically significant difference ($P<.001$). The mean score of mothers' knowledge on the premature infant care of the mothers 1 month after hospital discharge was higher than immediate post-preparation with a statistically non-significant difference ($P>.05$).

4. Regarding the mothers' behavior towards the premature infants after discharge, more than 20 mothers performed correct behavior in all topics except for feeding. Only 5 mothers breastfeeding while the other 35 mothers formula milk fed and/or gave supplementary food and/or water their babies.

5. The score of knowledge is related to the score of the premature infant care behavior 1 month after hospital discharge with statistically significant difference ($P< .05$).

Implication and Recommendations

Suggestions and application of research results

For nursing practice. The plan of the preparation and the instruction media such as a sound slides set and a handbook should be provided to mothers of premature infants before hospital discharge. Emphasis on breastfeeding is necessary because some of the mothers performed incorrect behavior. Staffs who are responsible for the maternal preparation are also needed.

For nursing education. The plan of the preparation and instrumentation media should be provided for the student nurses and the public health.

Suggestion for further studies

This present study has provided some solutions as well as some unsolved research problems that should be recommended for future study as follows.

1. This study had a limitation in selecting the samples, thus it is a quasi-experimental research which employed one group without a comparison group. This topic should be studied again by using both a control group and a experiment group.

2. The results of the mothers' preparation on the premature infant care knowledge and behaviors and the growth of the premature infants after three or six months discharge should be followed up.

3. The effects of the maternal preparation together with the husbands' participation in premature infant care after the discharge should be studied.

4. The effects of the maternal preparation on knowledge and caregiving behaviors towards babies with congenital anomalies after hospital discharge should be studied.

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Appendix A

Names of The Experts.

Names of the experts who tested the validity of the maternal preparation plan, the slide script, the handbook of premature infants caregiving, the questionnaire of knowledge on premature infants caregiving, the questionnaire of maternal behavior on premature infants caregiving after discharge, and record form of the premature infant health condition.

1. Assistant Professor Lamyong Rusmeemala.
   Coordinator Pediatric Division, Nursing Department, Faculty of Medicine, Ramathibodi Hospital, Mahidol University.
2. Assistant Professor Dr. Fongkham Tiloksakunchai.
   Pediatric Nursing Department, Faculty of Nursing, Mahidol University.
3. Assistant Professor Pornthip Apanakaphan.
   Pediatric Nursing Department, Faculty of Nursing, Mahidol University
4. Doctor Somporn Wangruangsatid.
   Pediatrician, Buddhachinarach Hospital, Phitsanulok Province.
5. Mrs. Ladda Poungpaiboon.
   Head of Pediatrics Unit 3, Buddhachinarach Hospital , Phitsanulok Province.

Appendix B

Consent Form.

Miss. Rungtiwa Wangruangsatid is a master student of Maternal and Child Nursing, Faculty of Nursing, Mahidol University studying effects of the maternal preparation on knowledge and caregiving behaviors towards premature infants after discharge. This study will provide information which will be used as a guideline on development of maternal preparation on premature infant caregiving after discharge, so that you can have some knowledge, confidence and capability to care for a premature infant.

The study procedures involve no foreseeable risks or harm to you or your child. The procedures include:1) participating in preparation on premature infant care-giving for 3 days before discharge. The activities will take approximately 60-90 minutes each day. 2) responding to a questionnaire about knowledge and behavior of premature infant care on the first day, and the last day of the study. Time for response to the questionnaire is approximately 40-50 minutes.

Your participation in this study is voluntary. You have the right to withdraw at any time and the care of your child and your relationship with the health care team will not be affected.

The study data will be coded so they will not be linked to your name. Your identity will not be revealed while the study is being conducted, or when the study is reported and published.

I have read this consent from and voluntarily consent to participate in this study.

Subject's signature

_____

Data _____

I have explained this study to the above subject, and sought her understanding for their information consent form.

Investigator's signature

_____

Data _____

Appendix C

Instrumentation.

The plan for maternal preparation on premature infants caregiving before discharge from the hospital.

Numbers of mothers: 1 person

Place: Pediatrics Unit 3, Buddhachinarach Hospital, Phitsanulok Province.

Duration: Three days, 60-90 minutes per day.

Person in charge: Miss Rungtiwa Wangruangsatid.

Objectives

To assess the capability of a mother with a premature infant after the preparation.

The third stage:

The end of preparation.

Plan for maternal preparation on the premature infant's caregiving before discharge from the hospital.

Objectives	Contents	Activities	Period	Media	Evaluation
The 1 st preparation plan. -In order to make the sample feel free and trust talking about the premature infant caregiving at home. I **The 3 rd preparation plan.** I I	**The 1 st stage,** Period of creating a relationship. I I **The 3 rd stage.** The end of preparation	1. The researcher creates a relationship with the sample by greeting and introducing herself, and gives opportunity I I I Then the researcher distributes the handbook to the sample and informs them about the appointed time.	10 minutes I I I I 5 minuts	I I I I I I I	-The sample's willingness to talk about her I I - Summary of the learned topics.

Slide script

Topic: A premature infant's care, Part 1

Objectives

After watching the slide (part 1), the mother of a premature infant can

1. know the correct meaning and behavior of a premature infant.
2. know the correct method of breastfeeding a premature infant.

Slide script on a premature infant's care, Part 1

No.	Figure	Script / Sound
1.	MS: a picture of a premature infant in an incubator.	FI: Music
2.	LS: a picture of a nurse giving a baby to the mother.	(Music)
3.	Key: Letters are the same as the verbal description.	- A sound slide on " A premature infant's caregiving after hospital discharge". This slide set is a partial fulfillment of a thesis. The thesis topic is the effects of maternal.
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52.	MS: The mother smiles while holding and looking at a baby.	infant needs which will enable the mother to respond to its needs and to breastfeeding correctly. FO: Music.

Slide script

Topic: A premature infant's care, Part 2

Objectives

After watching the slide (part 2), the mother of a premature infant can Know the correct techniques of cleaning after soiling, shampooing and bathing.

Slide script on a premature infant's care, Part 2

No.	Figure	Script / Sound
1.	MS: a picture of a premature infant in an incubator.	FI: Music
2.	LS: a picture of a nurse giving a baby to the mother.	(Music)
3.	Key: Letters are the same as the verbal description.	- A sound slide on " A premature infant's caregiving after hospital discharge". This slide set is a partial fulfillment of a thesis. The thesis topic is the effects of maternal
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28.	MS: A sleep a baby.	The mother knows how to clean after soiling, shampooing, and bathing. The technique can be adjusted as convenient. Regular cleaning keeps the baby FO: Music.

Slide script

Topic: A premature infant's care, Part 3

Objectives

After watching the slide (part 3), the mother of a premature infant can

1. know the correct technique of massaging and touching in order to accelerate the baby's growth.
2. know the correct medication technique and the advantages of following the checkup schedule.
3. know the correct technique of monitoring and solving common problems frequently found in infants.

Slide script on a premature infant's care, Part 3

No.	Figure	Script / Sound
1.	MS: a picture of a premature infant in an incubator.	FI: Music
2.	LS: a picture of a nurse giving a baby to the mother.	(Music)
3.	Key: Letters are the same as the verbal description.	- A sound slide on " A premature infant's caregiving after hospital discharge". This slide set is a partial fulfillment of a thesis. The thesis topic is the effects of maternal.
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50.	MS: A mother holds a baby	In addition, massaging and touching a baby daily accelerates the growth and weight gain. - FO: Music.

A Handbook

Premature Infant Caregiving

PREMATURE INFANT

CAREGIVING

PRODUCE BY

RUNGTIWA WANGRUANGSATID

This hand book is a partial fulfillment on "The effects of maternal preparation on knowledge and caregiving behavior toward premature infant after discharge." The hand book will assist the mothers to have understanding of the premature infant behaviors and needs, to have self- confidence and ability of suitable caregiving which will influence strong health, well growth and development of the premature infants.

RUNGTIWA WANGRUANGSATID

PRODUCER

NAME- SURMANE_____

BIRTH DAY _____

BIRTH WEIGHT _____**GRAMS**

WEIGHT BEFOR DISCHARGE _____**GRAMS**

DATE OF FOLLOW-UP

DATE	PLACE

Data collection instrument

Part 1 : The record form of demographic data about the mother and infant.

Part 2 : Questionnaire of the mothers' knowledge on premature infant care.

Part 3 : Questionnaire of the mothers' behavior on premature infants care.

Part 4: The record form of the health status of a premature infant after hospital discharge.

Data collection instrument

Questionnaire Number. _____

Part 1 : The record form of demographic data about the mother and infant

Notification: Please mark / in the ( ) or fill up the space.

The mother's information.

1. Age_____ years old.

2. Education level.

|

|

4.

The infant's information.

1. Gestational age (calculated by Ballard Score)_____ Weeks.

|

|

3. Health problems while hospitalized.

_____

_____

Part 2: Questionnaire of the mothers' knowledge on premature infant care.

Notification:

The objectives of this questionnaire are to evaluate the knowledge and understanding of the mother on premature infant care after hospital discharge. The evaluation is based on the characteristics and behaviors of a premature infant, breastfeeding, daily care, and common health problems and first aid.

Please read the sentence on the left and mark / in the space where your response is. The meaning of each response is:

- If the sentence is **true** to your understanding, please mark **"Yes"**.
- If the sentence is **false** to your understanding, please mark **"No"**.
- If you are **not sure or uncertain** of the sentence, please mark **"Not sure"**.
- If you **do not know the response**, please mark **"Do not know"**.

The questionnaire of knowledge on premature infant care.

NO	Statement	Yes	No	Not sure	Do not know
1.	Breast-fed babies had more frequent defecation per day.				
2.	Prolonged crying in baby with sobbings showing unpleasant condition.				
3.					
|					
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23.					
24.					
25.					

Part 3 : Questionnaire of the mothers' behavior on premature infants care .

Notification:

The objectives of this questionnaire are to evaluate the maternal behavior in caregiving for premature infant's after hospital discharge. The evaluation is based on behaviors of breastfeeding and daily care.

Please read the statement on the left and mark / in the space where your response is. The meaning of each response is:

- **Regularly** means the mother follows the stated practices every time when the event occurs.
- **Frequently** means the mother follows the stated practices almost all of the times when the event occurs.
- **Rarely** means the mother only sometimes follows the stated practices.
- **Not at all** means the mother has no stated practices or behaviors.
- **No situation** means the mother has no change of practices because the events have never occurred

The questionnaire of the mothers' behavior on premature infants.

NO	Statement	Regularly	Frequently	Rarely	Not at all	No situation
1.	Waking the baby to continue sucking, if he/she falls asleep.					
2.	Washing your hands before breastfed					
|						
|						
|						
18.						
19.						

20. Whom have you get knowledge on a premature infant care from?

|

|

22. How is your performance of premature infant caregiving after participation in the program?

_____High ____Moderate _____Low

Part 4: The record form of the health status of a premature infant after hospital discharge.

1. Weight after the discharge_____ Weeks _____ Grams.

2. History of illness after the discharge.

( ) No illness

( ) Illness with the symptoms as follows (more than one answer is possible)

Conjunctivitis

( ) Light illness (specify the first aid)

( ) Serious illness which needs hospitalization

(specify number) _____ times

(specify number) _____ times

|

|

|

|

|

Others (specify the symptom, identification of illness and the first aid or assistance)

_____

_____

BIOGRAPHY

NAME	Miss. Rungtiwa wangruangsatid
DATE OF BIRTH	20 February 1972
PLACE OF BIRTH	Phitsanulok, Thailand
INSTITUTIONS ATTENDED	Boromarajonani Collage of Nursing, Buddhachinarach. 1990-1994 : Diploma in Nursing Science Equivalent to Bachelor of Science in Nursing. Mahidol University, 1997-1999: Master of Nursing Science (Maternal and Child Nursing)
POSITION & OFFICE	1995-Present Boromarajonani Collage of Nursing, Buddhachinarach. Phitsanulok. 65000 Position: Register nursing 5